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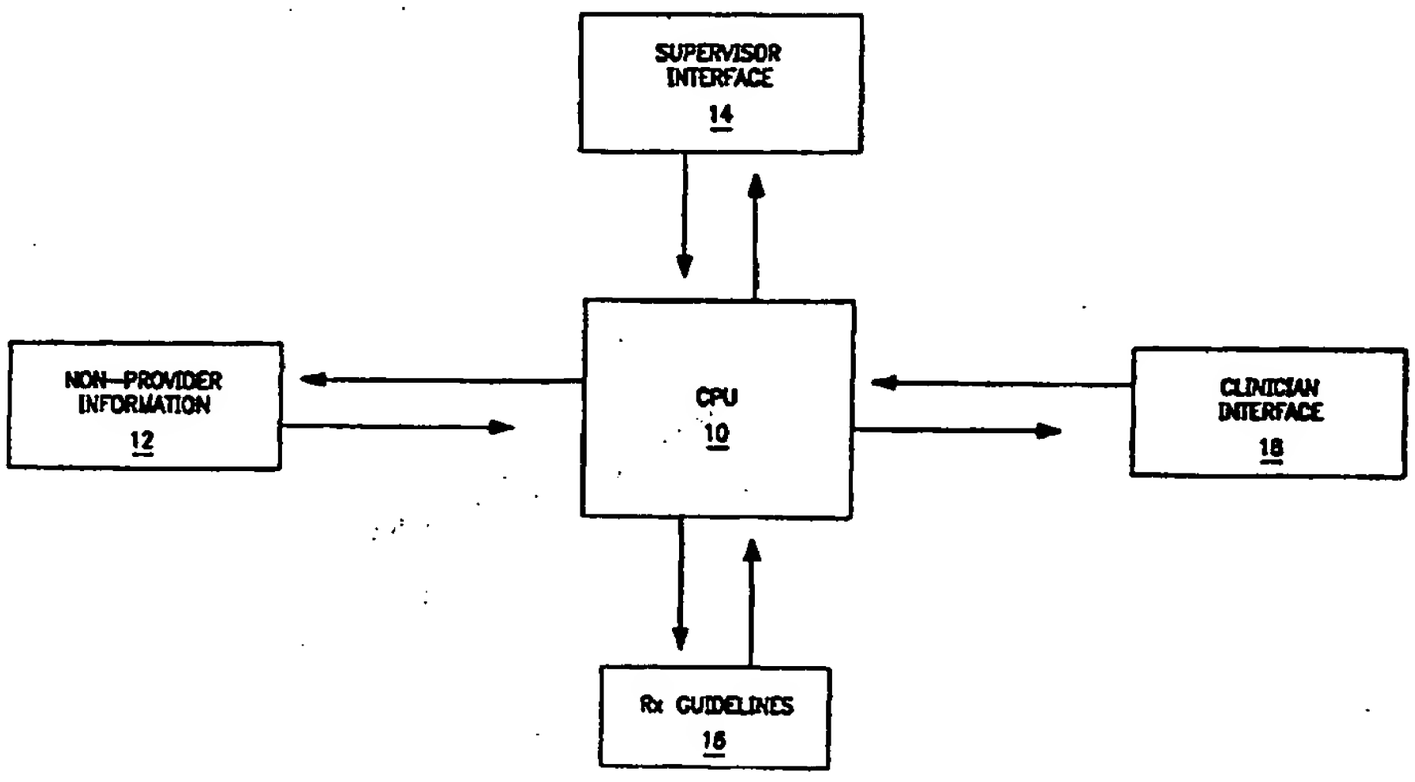

(57) Abstract

This invention is a system (10) that can collect data directly from a client (12), use a data to diagnose, and establish the severity of a client's condition. The system can also use this data to look–up one or more appropriate treatments according to treatment guidelines (16) stored in its memory. It then uses this information to monitor if the treatment decisions made by the treating clinician or other medical provider is consistent with the stored treatment guidelines. The system can suggest treatments to the medical provider, inform the provider if the provider chooses a treatment or treatments that do not follow the treatment guidelines, require the provider to actively override the treatment guidelines or require the provider to obtain agreement to override from a supervisor (14). Additionally, the system can store information on treatments that do not follow the treatment guidelines for ongoing review of provider performance by provider supervisors.

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COMPUTER SYSTEM FOR EVALUATING A CLIENT'S CONDITION

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates to a computer based system that diagnoses, establishes severity, and monitors a client's condition and also monitors medical decisions made by the clinician treating the client.

2. DESCRIPTION OF RELATED ART

As shown and discussed in U.S. Patent Nos. 5,553,609; 5,601,435; 5,471,382; 5,572,421; 5,341,291; 5,558,638; 5,517,405; 5,357,427 and 5,390,238 computer systems are frequently used in the medical industry to collect data. Some of these systems allow data to be collected from a client that is at a location remote from the clinician or other medical personnel. The remotely collected data can be reviewed by clinicians to generate a course of treatment. Even when using computer collected data, however, clinicians may select treatment that diverges from recommended treatment guidelines; to date, no system uses data not entered by the clinician to monitor clinician decisions for concordance with treatment guidelines.

U.S. Patent No. 5,473,537 issued to Glazer et al. discloses a system and method for collecting psychiatric data and then providing a recommended course of treatment. The data is provided by a

client who responds to a number of questions. The recommended treatment is determined from a complex matrix that contains numerical values that are associated with the client's answers. The clinician may review and follow the recommended treatment. The Glazer system still allows the clinician to ignore the recommended treatment and prescribe a different treatment. The Glazer system does not monitor the treatment prescribed by the clinician, and is unable to use treatment guidelines interactively to guide medical decisions. Hence, a clinician may choose to ignore the treatment guidelines and the Glazer system neither records this nor attempts to influence such choices.

To date there has not been developed a system which can both evaluate a client's condition and monitor a treatment prescribed by a clinician. Such a system would be particularly desirable for a Health Maintenance Organization (HMO) that is attempting to provide care according to recommended treatment guidelines. It would therefore be desirable to provide a computer-based system that attempts to influence treatment decisions and is capable of requiring real-time supervisory accession to decisions that diverge from or are not covered by the treatment guidelines.

Traditionally, clinicians diagnose clients based on information obtained in an initial interview. Usually, this information is obtained neither completely nor consistently. Increasingly, medical diagnosis is established based on evaluating the client's condition according to accepted criteria. For example, a clinician should determine if a client has a

Major Depression Episode (MDE) by establishing if the client meets the criteria described in the consensus document establishing these criteria, the Diagnostic and Statistical Manual-IV.

It would be desirable to provide a computer based system that could provide a single questionnaire that is used both to diagnose and to determine the severity of the client's condition. Currently, after determining a diagnosis, if a clinician wishes to quantitatively determine the severity of the condition, they must use a separate instrument to measure severity for that diagnosis. In the case of MDE, for example, the clinician might use the Hamilton Rating Scale for Depression (HRS-D) because many diagnostic measures, including the DSM-IV, do not provide a quantitative measure of severity of a diagnosis. Similarly, many severity measures, including HRS-D, do not establish a diagnosis.

SUMMARY OF THE INVENTION

The present invention is a system which can monitor how congruent a medical provider's treatment decisions are with treatment guidelines, including providing real-time alerts and mandatory review in the case of divergent decisions. The system includes a first terminal that allows a client to enter data in response to questions, and a second terminal at which a clinician can review the data, enter additional data, and enter a medical decision into the system. The system uses the data to look up recommended treatment from treatment guidelines stored in its memory, and reports those

treatments that are consistent with the guidelines. The system also compares the medical decision entered by the clinician to the recommendation the system retrieved from the treatment guidelines.

The system can warn the clinician regarding treatment decisions that deviate from prescribed treatment guidelines; it can allow the clinician to override the guidelines after entering additional information; and it can, in some cases, require a clinician's supervisor to enter a password before the clinician may implement medical decisions that deviate from standard treatment guidelines.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a flowchart showing how the present invention reviews and monitors data;

Figure 2 is a schematic of the present invention;

Figures 3a-b are flowcharts showing a sample client entering data into the system;

Figures 4a-c are flowcharts showing a clinician utilizing the system for a psychiatric client visit;

Figures 5a-j are flowcharts showing questions provided by the system;

Figure 6 shows how the system determines a diagnosis;

Figure 7 shows how the system determines severity;

Figure 8 is a flowchart of treatment guidelines for depression;

Figure 9 is a flow chart of guidelines for suicidality.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings more particularly by reference numbers, Figure 1 shows an overview of the present invention. The system is used to obtain non-provider information, compare the information with treatment and monitoring guidelines, guide clinician medical decisions, and require supervisor approval for decisions that deviate from standard guidelines. The non-provider information 12 may be client-entered self-report, laboratory data, or diagnostic tests and other reports. The non-provider information 12 is compared with treatment guidelines 16. The clinician interface 18 may provide the following functions: allow a clinician to enter additional information, provide a graphical display of data reports, report recommended treatment according to treatment guidelines, alert clinician of deviations from guidelines with explanations, allow a clinician to override treatment guidelines either with or without supervisor signoff. The supervisor interface 14 displays alerts for treatment decisions that require sign-off, and provides monitoring data on consistency of clinician treatment with treatment guidelines. If the non-provider information 12 is client-entered self report, the system is also used to generate a diagnosis and severity level for client's condition.

By way of example, Figure 2 demonstrates how the system 20 may be used to query clients to enter information, collect data, evaluate a client's condition and monitor medical decisions made by a clinician.

The system 20 may include a first terminal 22 which may query a client to enter data in response to questions displayed by the terminal 22. The system 20 may also have a second terminal 24 which may display client responses and highlight suggested treatments based on treatment guidelines stored in memory; it also may allow a clinician to review the data and select a treatment decision. The terminal 24 may display an alert if the treatment decision selected by the clinician is inconsistent with treatment guidelines stored in memory, and may require supervisory approval prior to implementation.

The system 20 includes a computer 26 comprised of a central processing unit (CPU) 28 that is connected to memory 30 by a bus 32. An Input-ouput port (I/O Port) 34 receives the data generated from CPU 28 and entered from terminals 22 and 24, and provides information which is displayed by the terminals 22 and 24. The terminals 22 and 24 may be remotely linked to the computer 26. The system 20 of the present invention allows a client to enter data without having to be physically present at the facility of the clinician. By way of example, the terminals 22 and 24, and computer 26 may be linked by a LAN or WAN system.

The memory 30 typically includes both random access memory (RAM) and read only memory (ROM). The memory 30 may also include a mass storage medium such as a hard disk drive. The CPU 28 is connected to the input/output (I/O) port 34 by the bus 32. The I/O port 34 is connected to the terminals 22 and 24. The I/O port 34 may also be connected to a printer 36.

The CPU 28 performs routines and computations in accordance with instructions retrieved from memory 30. The instructions may be embedded in ROM, stored on the mass storage device and/or retrieved from an external source such as a floppy disk, or downloaded from a network through the I/O port 34. The CPU 28 may generate information such as questions that are provided to the terminals 22 and 24 through the I/O port 34 in accordance with the instructions of a software program. The CPU 28 may also process and store data that is entered through the terminals 22 and 24. The system 20 may query a client to enter data in response to questions displayed by the terminal 22. The system 20 may also display a client's responses to questions and highlight suggested decisions based on stored treatment guidelines at terminal 24. A clinician may choose treatment decisions and/or be required to obtain supervisory approval for treatment decisions that deviate from treatment guidelines stored in memory 30.

Figures 3a-b show a sample process for compiling psychiatric data on a client. In decision block 100 the client is queried as to whether they are in the system 20. If not, the computer assigns a unique identification number (ID) to the client and enters the client's personal information in blocks 102 and 104. A medical staff member then enters an intake option in block 106. The intake option relates to a series of questions that are asked of the client. If the client is not new, the computer 26 retrieves the client's personal information and the medical staff member enters a follow-up option in blocks 108 and 110, respectively.

If the medical staff member selects the follow-up option in block 110, the computer checks the records for a previously assigned diagnosis in block 116. In block 118, the client enters data in response to questions provided by the computer 26 relating to previously assigned diagnosis from block 116 and displayed by the first terminal 22. The computer 26 then stores the client's entered data in a record and links the record to the client's ID in blocks 120 and 122.

If the medical staff member selects the intake option from block 106, the process proceeds to blocks 124, 126 and 128. The client enters data in response to questions regarding background history and intake screener questions in blocks 124 and 126. The intake may include questions relating to a client's psychological state; for example, the client may be asked whether they are sad, etc.

The entered data is stored in a unique record based on the client ID in block 128. The process then determines whether the client answered any of the questions in the affirmative in decision block 130. If the client did not respond "yes" to any question, then the process proceeds to block 122 where the computer links all of the client's responses with the client ID. If the client does answer "yes", the system queries the client with further questions regarding current symptoms for all possible diagnoses in block 132. The client's responses are stored in client's unique record in block 134.

Figures 4a-c show a process in which the system suggests diagnostic options based on treatment guidelines retrieved from memory 20.

The example in figures 4a-c are for diagnostic guidelines for depression. In block 150 the clinician enters the client's name or ID through the second terminal 24. Alternatively, the clinician can enter the data through the first terminal 22. The computer 26 then displays the client's records, including entered data and suggested treatment guidelines in block 152. The data can be provided to the clinician in a graphical display or other form of organized data compilation. In block 154, the clinician selects a diagnosis(es) displayed on terminal 22 or 24 based on clinical evaluation, including information conveyed via computer. In decision block 156, the process determines whether the diagnosis(es) selected by the clinician deviates from the diagnosis(es) highlighted by the treatment guidelines. If the clinician diagnosis(es) selected in block 154 are consistent with those of the guidelines highlighted in block 152, the process proceeds to block 170 for treatment guidelines. If the clinician diagnosis(es) selected in block 154 deviates from the highlighted guidelines in block 152, the system displays an alert for the clinician, and highlights how clinician's diagnosis deviates from suggested diagnosis in block 158. In decision block 160, the process determines whether the clinician has additional supporting information for chosen diagnosis(es). If the clinician has no additional supporting information, the process proceeds to block 166, wherein the system determines whether the discrepancy requires supervisor approval. If the clinician does have additional information, it is entered in block 162 and clinician confirms

diagnosis in decision block 164. If clinician does not confirm diagnosis in block 164, the process stores the sequence in memory 20 for quality review in block 165 and returns to block 152, wherein system highlights suggested diagnosis(es). If clinician does confirm diagnosis(es) in decision block 164, the process determines whether supervisory approval is required in decision block 166. If supervisory approval is not required, the process stores the sequence in memory 20 for quality review in block 168 and proceeds to block 170 for highlighted treatment guidelines. If supervisory approval is required, clinician's supervisor enters a password and sequence is stored in memory 20 for quality review. The process then proceeds to block 170.

In block 170, the system highlights suggested treatments for diagnosis(es) entered in block 154 according to treatment guidelines in memory 20. In block 172, the clinician selects a treatment plan on screen. In decision block 174, the process determines whether the clinician treatment plan is consistent with highlighted treatment guidelines. If the selected treatment is consistent with highlighted guidelines, the process proceeds to specific diagnosis' Treatment Guidelines Module. If the treatment selected by the clinician in block 172 is not consistent with treatment guidelines highlighted in block 170, the system determines whether there are high risk factors which should be taken into consideration for selected treatment in decision block 176 (for example, if suicidality scores are at or above threshold values). If there are high risk factors, the system proceeds to High Risk Module.

If the discrepancy in treatment decision is not related to high risk factors, the system determines whether the clinician has additional supporting information for selected treatment plan in decision block 178. If the clinician does not have additional supporting information, the process proceeds to block 182. If the clinician does have additional supporting information, it is entered in block 180. In decision block 182, the process determines whether the discrepancy requires supervisory approval. If the process determines that supervisory approval is not required, it stores the sequence for quality review in memory 20 in block 184 and proceeds to specific diagnosis' Treatment Guidelines Module. If supervisory approval is required, clinician's supervisor enters a password and sequence is stored in memory 20 for quality review.

Figures 5a-j show a process for a questionnaire that is provided to the client on the terminal 22. The process includes a plurality of questions which allow the system and medical per sonnel to determine both a diagnosis and a severity rating for a client. The answers to the questions are used to find a diagnosis according to criteria described in the Diagnostic and Statistical Manual-IV (DSM-IV). Additionally, the quantitative structure of the answers, combined with the DSM-IV criteria allows the clinician to use the same information to measure the severity of the condition, rather than additionally using a separate severity measure, such as the Hamilton Rating Scale for Depression (HRS-D).

The answers to the questions are stored in the client's personal record. The answers can be compiled and provided in a variety of formats. Figures 6 and 7 show examples of how the system determines diagnosis and severity from answers to certain questions regarding depression. Figure 6 shows how the system determines a diagnosis of depression. The questions are based on DSM-IV criteria for diagnosing Major Depressive Episode (MDE). In the key, the system determines that if 5 or more of the DSM-IV based criteria have a score of ≥ 5, the client should receive a diagnosis of MDE. The process determines that the current client has 6 criteria for depression that are ≥ 5 and therefore the client screens positive for Major Depressive Episode (MDE).

Figure 7 uses the same data to determine the severity of the client's current symptoms. In the key, the system determines cut-off scores for symptom severity. In the example, the client has an overall score of 46 and the system thus establishes a "severe" rating for current symptoms.

Figure 8 shows a process that determines a recommended treatment(s) provided to the clinician for specific diagnosis(es). The recommended treatment is based on the client's responses to the questions. In the example in figure 8, the process determines whether the client has active suicidal ideation in decision block 190. In decision block 192, the process determines whether the client meets 5 of the 9 DSM-IV based criteria for Major Depression. If less than 5 criteria were determined in decision block 192, the process determines that the client is not clinically depressed in block 194. In

decision block 196, the process determines whether the client would still like to receive treatment. If client indicates they do not want treatment, they are given informational materials, which can be downloaded and printed out at the printer 26, and leave the system to pursue other options on their own. If they do want treatment as indicated in decision block 196, the system determines whether they would like to try an automated cognitive therapy module in decision block 200. If client responds affirmatively, the process proceeds to a cognitive therapy module. If the client responds in the negative, he or she is referred to traditional psychotherapy treatment in block 202. Referring to decision block 192, if 5 or more DSM-IV based criteria for depression were met, the process computes a depression score and determines whether the score exceeds a predetermined value in decision blocks 204, 206 and 208. If the client's score is less than or equal to an established cutoff value, the process recommends a specific treatment plan. For example, in figure 8, if a client's depression score is calculated at greater than 14, but less than or equal to 21 in decision block 206, the process displays the stored recommended treatment guidelines for that score; in block 214, antidepressant treatment is suggested, with regular follow-up visits. The process then queries the client as to whether they are interested in trying anti-depressant medications in decision block 218. If the client responds in the negative, the process proceeds to decision block 196, wherein client is queried as to whether he or she would like to receive

treatment. If client does not want treatment, he or she is given informational material, including data regarding the possibility of symptoms worsening without treatment, and leaves the system to pursue options on their own in block 198. If the clients responds affirmatively in decision block 196, the process proceeds to decision block 200, wherein the client is queried as to whether he or she would like to try an automated cognitive therapy module and proceeds as stated above in block 200. If the client does want to try anti-depressant medications as indicated in decision block 218, the process determines whether client had previous positive response with anti-depressant medications in decision block 220. The process may determine past anti-depressant medication history by getting client response or by checking client's previous response from history questions in block 124. If the process determines that the client had previous positive response with anti-depressant medications, the system queries the client as to whether he or she had significant side effects from the medication in decision block 222 (the process may instead determine whether client had significant side-effects by checking clients' previous response from history questions in block 124). If the client did have significant side effects, the system highlights treatment guideline to try a different antidepressant in block 224. If the client did not have significant side effects, the system highlights treatment guideline to try the same antidepressant in block 226.

Referring to decision block 220, if the process determines that the client did not have a

previous positive response with anti-depressant medications, the system determines whether client had an adequate trial in decision block 228. Adequate trial is established from client's history information entered in block 124 and is based on stored guidelines. If the system establishes that the client did have an adequate trial, it highlights the suggested treatment guideline to try a different antidepressant in block 230. If the client did not have an adequate trial as established in decision block 228, the system establishes whether client had significant side effects in decision block 232. If client did not have and adequate trial of previous medication and no significant side effects were established, the system highlights the suggested treatment guideline to try the same antidepressant in block 234.

Referring to decision block 208, if the score is greater than the third threshold, the process proceeds to the High Risk Module. Figure 9 shows an example of a High Risk Module for suicidality. The system determines whether the client has active suicidal ideation in decision block 240. If the client scores do not show active suicidal ideation, the process proceeds to block 242 to prompt the clinician to confirm no suicidality orally with the client. The system determines whether a treatment plan has been selected in decision block 244 and, if a treatment plan has been selected, the process provides educational material for the client in block 246 which can be downloaded and printed out at the printer 26. If a treatment plan has not yet been selected, the process returns to block 152.

If the client has any active suicidal ideation, the process proceeds to block 248, wherein clinician is prompted to evaluate client's suicidal ideation orally. In decision block 250, the system determines whether the clinician wishes to consider outpatient treatment. If the clinician responds in the negative, the process proceeds to block 252, wherein the client is referred to a crisis center, hospital, etc. If the clinician does wish to consider outpatient treatment, the process determines whether the clinician has a longstanding relationship with the client based on stored guidelines in decision block 254. If the clinician does have a longstanding relationship, the process proceeds to block 256, wherein client is given high-intensity outpatient treatment. If the process determines that the clinician does not have a longstanding relationship with the client in decision block 254, the clinician's supervisor is required to approve decision and the sequence is stored in memory 20 for quality review before proceeding to block 256.

The present invention thus provides a number of computer based processes which can evaluate client conditions and also monitor both the client, and the clinician treating the client.

While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative of and not restrictive on the broad invention, and that this invention not be limited to the specific constructions and arrangements shown and described, since various

other modifications may occur to those ordinarily skilled in the art.

CLAIMS

What is claimed is:

1. A computer system for processing medical data, comprising:
   - a first terminal that allows a client to enter data in response to a question;
   - a second terminal that allows a clinician to review the entered client data and enter medical decisions; and,
   - a computer that applies the client-entered data to treatment guidelines stored in its memory, and determines one or more treatments that the treatment guidelines specify as appropriate, given the client-entered data.

2. The computer system as recited in claim 1, wherein the medical decision is a treatment and the computer system compares one or more treatments determined using the treatment guidelines to the one or more treatments selected by the clinician.

3. The computer system as recited in claim 1, wherein the medical decision is a diagnosis and the computer system compares the diagnosis determined using the treatment algorithm to the diagnosis selected by the clinician.

4. The computer system as recited in claim 1, wherein said computer provides a query to said second terminal if the treatment guidelines do not match the medical decision entered by the clinician.

5. The computer system as recited in claim 1, further that allows for implementation of treatment decisions and may comprise a printer for printing prescriptions and other treatment-related materials.

6. The computer system as recited in claim 5, wherein said computer may require a clinician's supervisor or other provider's supervisor to enter a password before allowing implementation of treatment decisions.

7. The computer system as recited in claim 1, wherein said computer provides a display of one or more treatments determined using the treatment guidelines to said second terminal.

8. A method for monitoring a medical decision entered into a computer system, comprising the steps of:

a) providing a question on a terminal;

b) entering data in response to the question;
c) displaying the entered data;
d) entering a medical decision by a clinician viewing the entered data;
e) displaying treatments determined using the treatment guidelines; and,
f) comparing the treatment determined using the treatment guidelines with the medical decision entered by the clinician.

9. The method as recited in claim 8, further comprising the step of providing a query to the clinician to reconsider the medical decision if the decision determined by treatment guidelines does not meet the medical decision entered by the clinician.

10. The method as recited in claim 8, further comprising the steps of entering a prescription and printing the prescription, displaying treatment guidelines for daytreatment options, inpatient and outpatient hospitalization, and other treatment options, including cognitive and behavioral therapies.

11. The method as recited in claim 10, comprising, potentially, the step of requiring the password of a clinician's

or other provider's supervisor before allowing the implementation of treatment decisions.

12. The method as recited in claim 8, further comprising the step of displaying one or more treatments determined by the treatment guidelines to the clinician after the data is entered.

13. A method for determining psychiatric diagnosis and severity of a client's condition by:

a) providing a quantitative set of questions based on criteria described in the DSM-IV;

b) answering said questions;

c) displaying said answers; and

d) evaluating said information for presence or absence of criteria and establishing severity based on quantitative results.

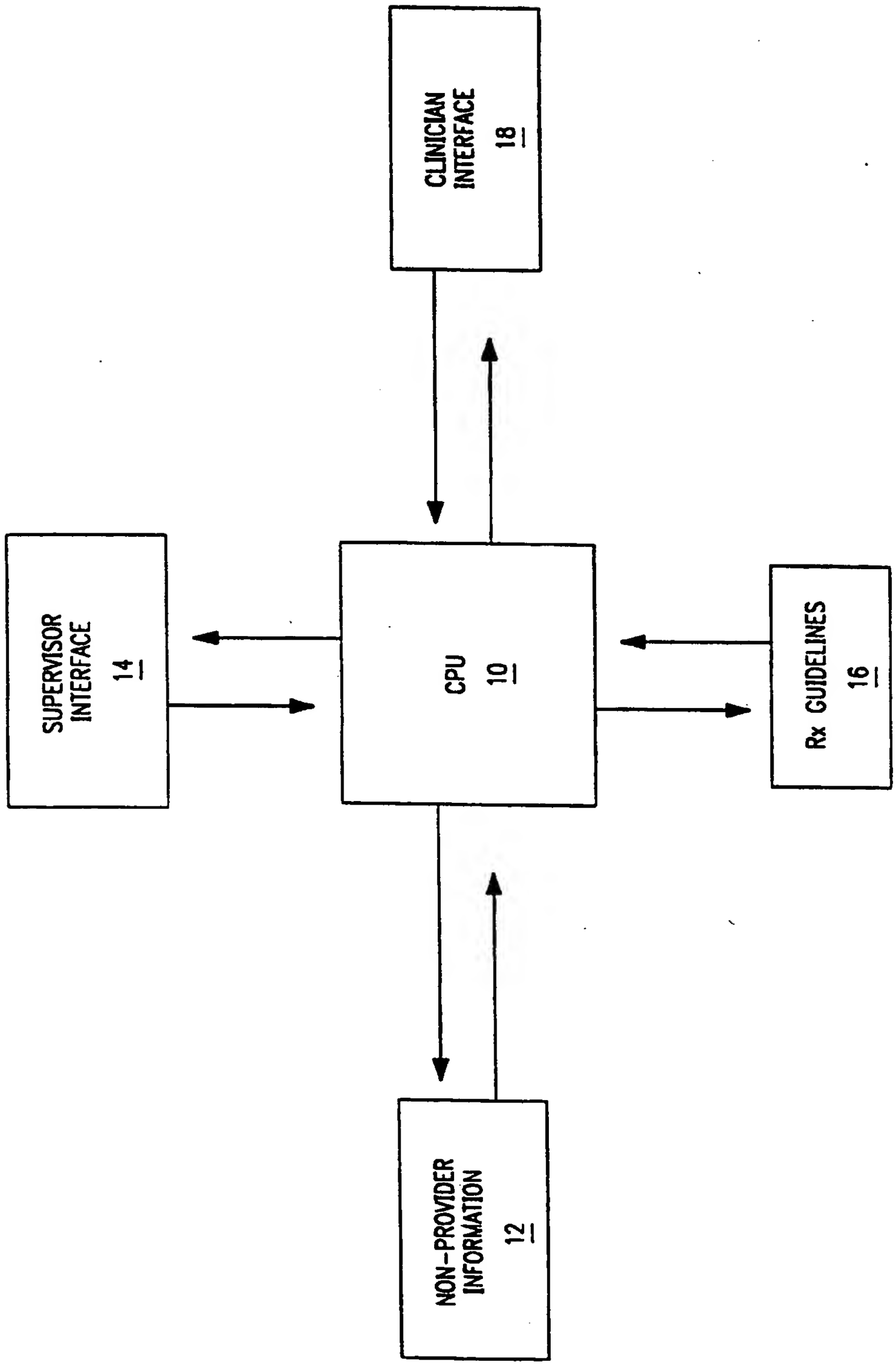

CLINICIAN INTERFACE 18
SUPERVISOR INTERFACE 14
CPU 10
Rx GUIDELINES 16
NON-PROVIDER INFORMATION 12

FIG. 1

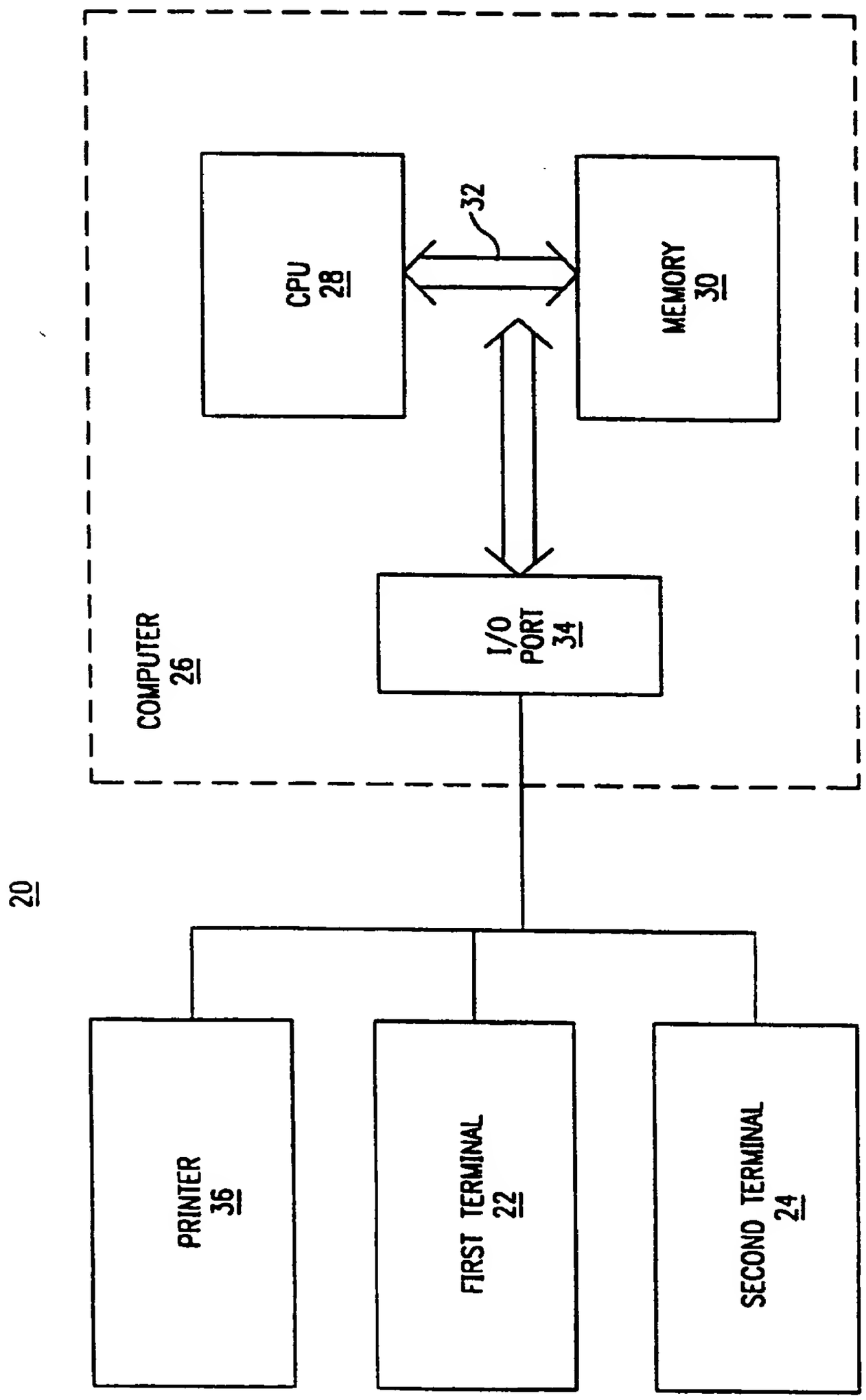

20
COMPUTER
26
CPU
28
32
MEMORY
30
I/O
PORT
34
PRINTER
36
FIRST TERMINAL
22
SECOND TERMINAL
24

FIG. 2

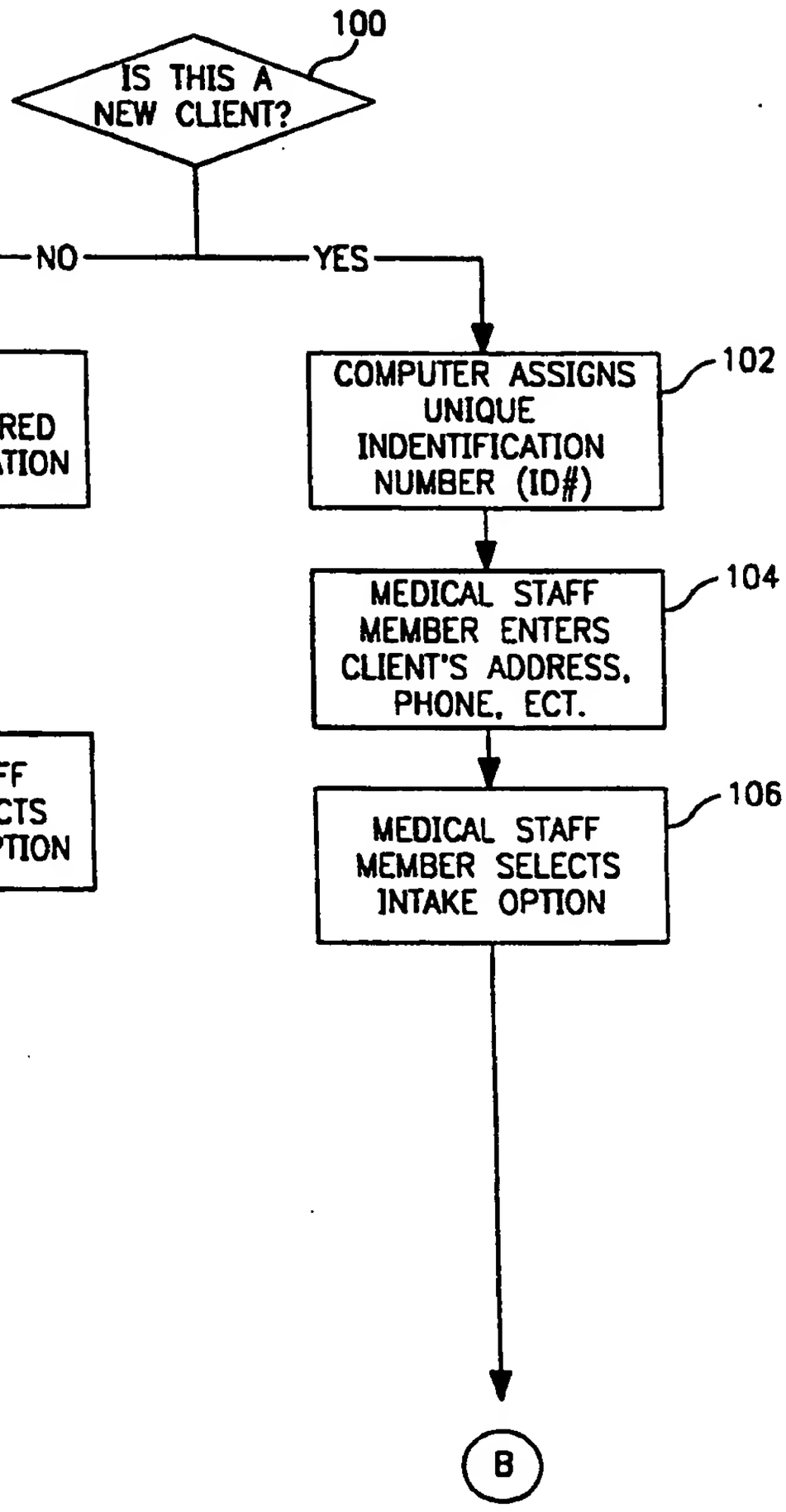

100
IS THIS A NEW CLIENT?
NO
YES
108
COMPUTER RETRIEVES STORED CLIENT INFORMATION
110
MEDICAL STAFF MEMBER SELECTS FOLLOW-UP OPTION
A
COMPUTER ASSIGNS UNIQUE INDENTIFICATION NUMBER (ID#)
102
MEDICAL STAFF MEMBER ENTERS CLIENT'S ADDRESS, PHONE, ECT.
104
MEDICAL STAFF MEMBER SELECTS INTAKE OPTION
106
B

FIG. 3a

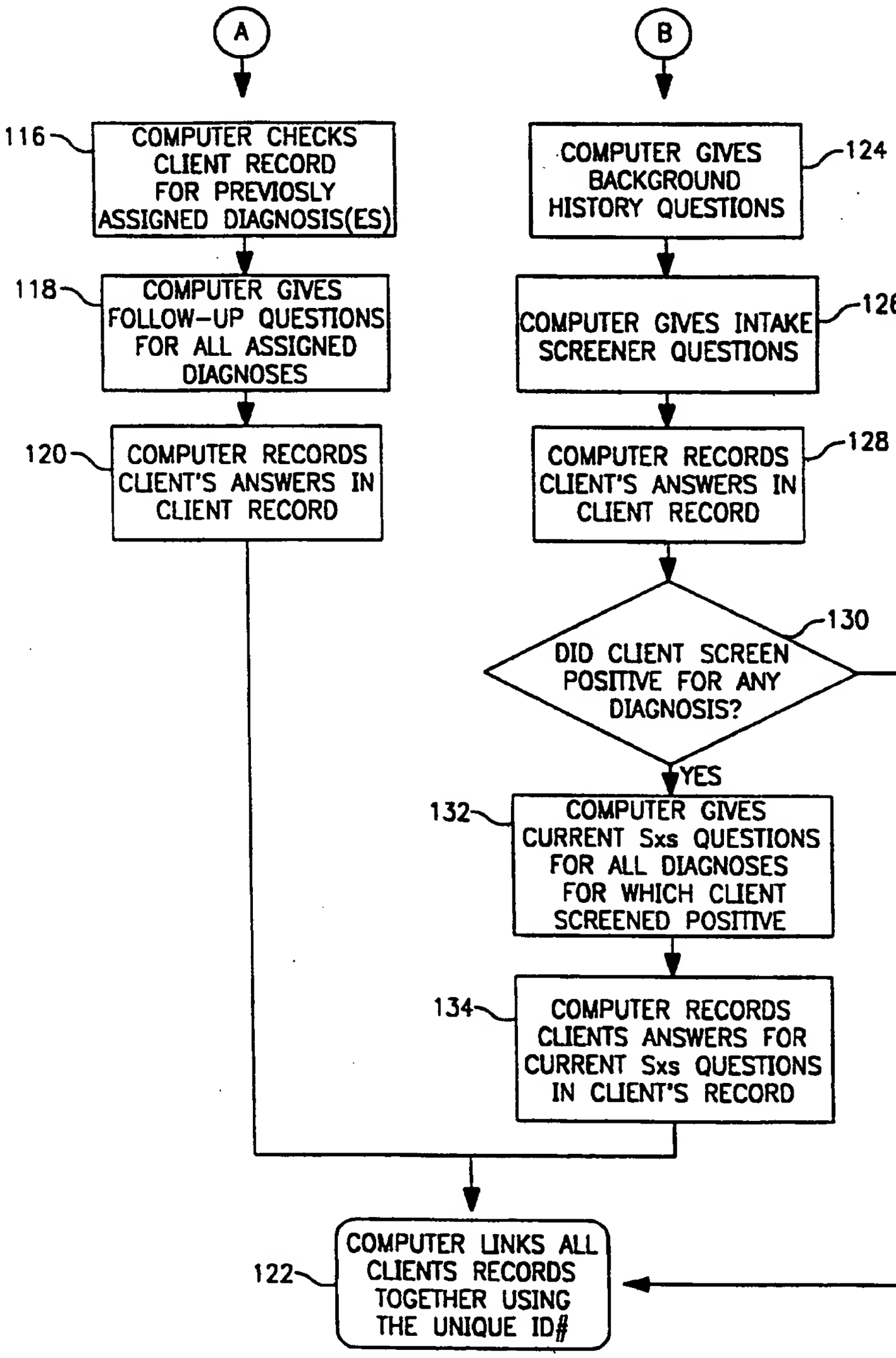

A
B
116
COMPUTER CHECKS CLIENT RECORD FOR PREVIOSLY ASSIGNED DIAGNOSIS(ES)
118
COMPUTER GIVES FOLLOW-UP QUESTIONS FOR ALL ASSIGNED DIAGNOSES
120
COMPUTER RECORDS CLIENT'S ANSWERS IN CLIENT RECORD
124
COMPUTER GIVES BACKGROUND HISTORY QUESTIONS
126
COMPUTER GIVES INTAKE SCREENER QUESTIONS
128
COMPUTER RECORDS CLIENT'S ANSWERS IN CLIENT RECORD
130
DID CLIENT SCREEN POSITIVE FOR ANY DIAGNOSIS?
YES
NO
132
COMPUTER GIVES CURRENT Sxs QUESTIONS FOR ALL DIAGNOSES FOR WHICH CLIENT SCREENED POSITIVE
134
COMPUTER RECORDS CLIENTS ANSWERS FOR CURRENT Sxs QUESTIONS IN CLIENT'S RECORD
122
COMPUTER LINKS ALL CLIENTS RECORDS TOGETHER USING THE UNIQUE ID#

FIG. 3b

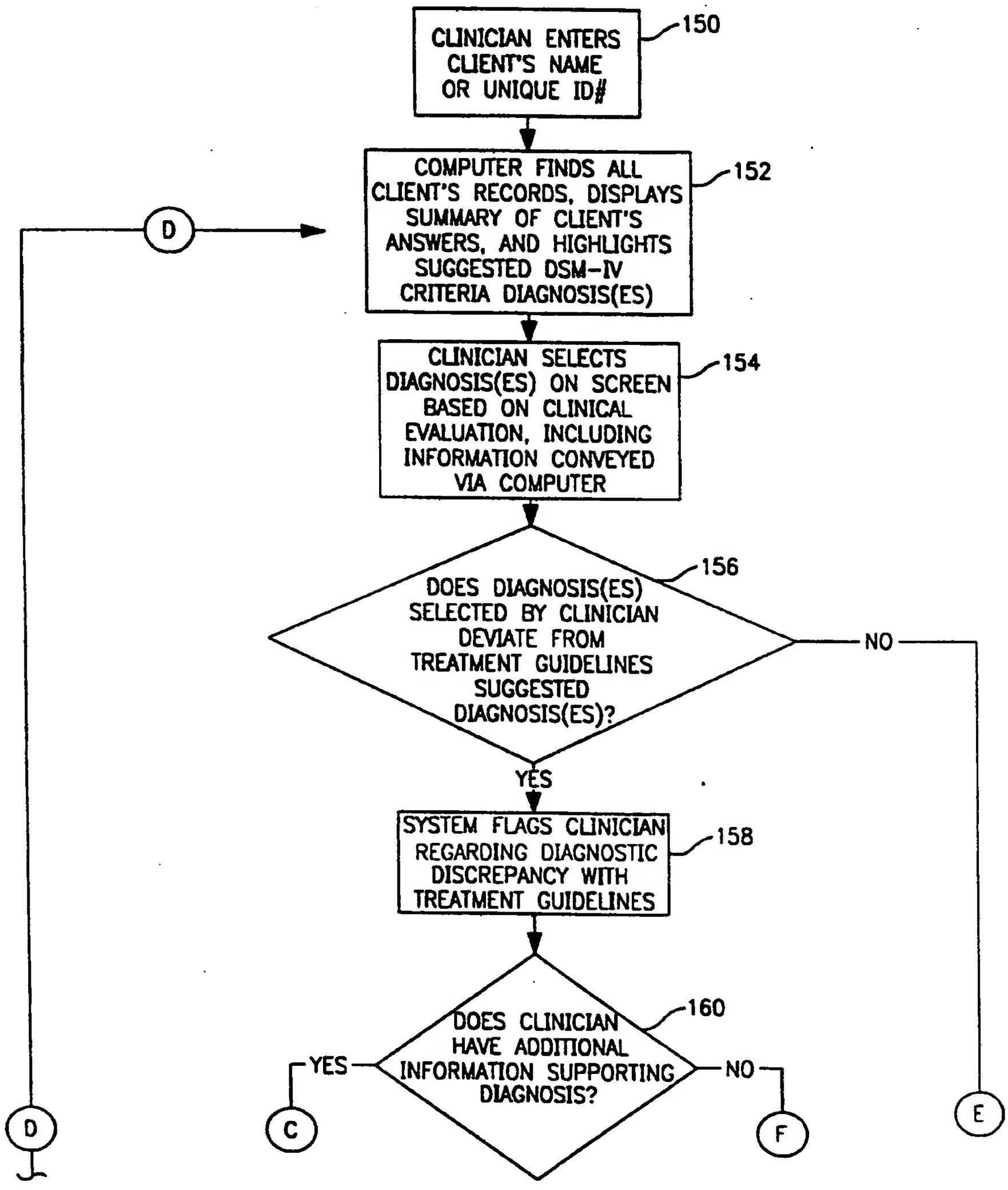

CLINICIAN ENTERS CLIENT'S NAME OR UNIQUE ID#
150
COMPUTER FINDS ALL CLIENT'S RECORDS, DISPLAYS SUMMARY OF CLIENT'S ANSWERS, AND HIGHLIGHTS SUGGESTED DSM-IV CRITERIA DIAGNOSIS(ES)
152
D
CLINICIAN SELECTS DIAGNOSIS(ES) ON SCREEN BASED ON CLINICAL EVALUATION, INCLUDING INFORMATION CONVEYED VIA COMPUTER
154
DOES DIAGNOSIS(ES) SELECTED BY CLINICIAN DEVIATE FROM TREATMENT GUIDELINES SUGGESTED DIAGNOSIS(ES)?
156
NO
YES
SYSTEM FLAGS CLINICIAN REGARDING DIAGNOSTIC DISCREPANCY WITH TREATMENT GUIDELINES
158
DOES CLINICIAN HAVE ADDITIONAL INFORMATION SUPPORTING DIAGNOSIS?
160
YES
NO
C
F
D
E

FIG. 4a

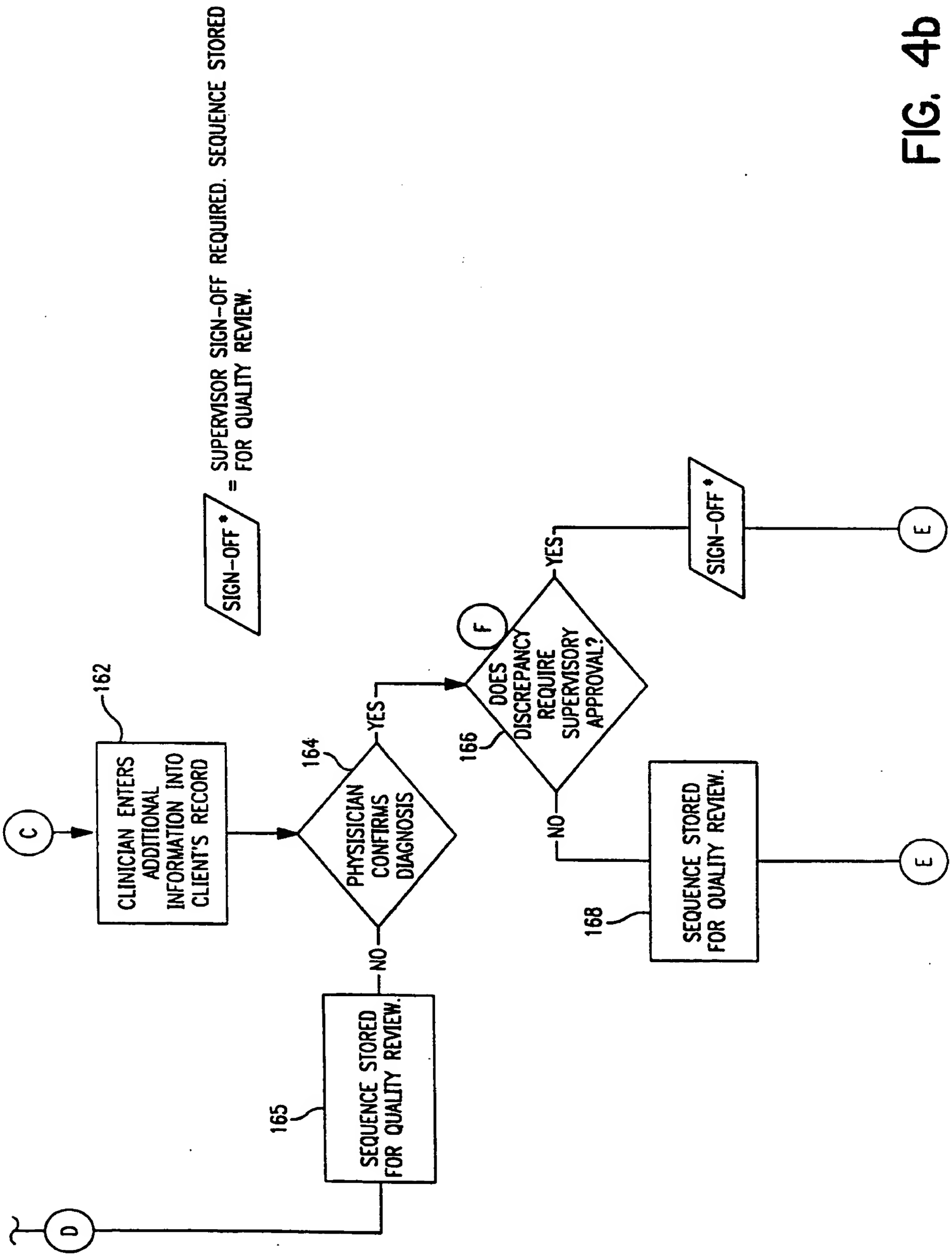

SIGN-OFF * = SUPERVISOR SIGN-OFF REQUIRED. SEQUENCE STORED FOR QUALITY REVIEW.
C
CLINICIAN ENTERS ADDITIONAL INFORMATION INTO CLIENT'S RECORD
162
PHYSISICIAN CONFIRMS DIAGNOSIS
164
YES
NO
SEQUENCE STORED FOR QUALITY REVIEW.
165
D
F
DOES DISCREPANCY REQUIRE SUPERVISORY APPROVAL?
166
YES
NO
SIGN-OFF *
SEQUENCE STORED FOR QUALITY REVIEW.
168
E

FIG. 4b

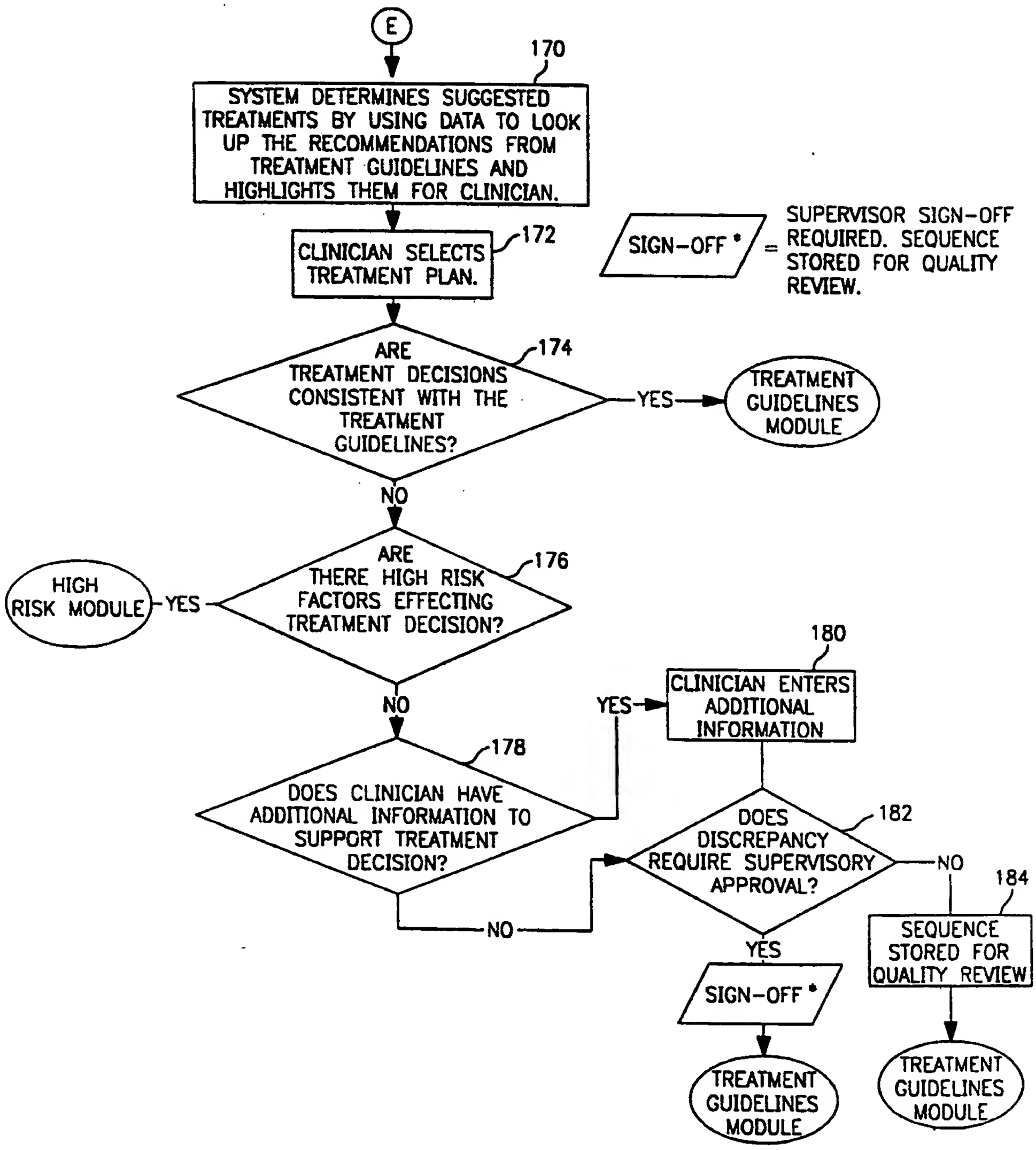

E
170
SYSTEM DETERMINES SUGGESTED TREATMENTS BY USING DATA TO LOOK UP THE RECOMMENDATIONS FROM TREATMENT GUIDELINES AND HIGHLIGHTS THEM FOR CLINICIAN.
172
CLINICIAN SELECTS TREATMENT PLAN.
SIGN-OFF *
= SUPERVISOR SIGN-OFF REQUIRED. SEQUENCE STORED FOR QUALITY REVIEW.
174
ARE TREATMENT DECISIONS CONSISTENT WITH THE TREATMENT GUIDELINES?
YES
TREATMENT GUIDELINES MODULE
NO
176
ARE THERE HIGH RISK FACTORS EFFECTING TREATMENT DECISION?
HIGH RISK MODULE
YES
NO
178
DOES CLINICIAN HAVE ADDITIONAL INFORMATION TO SUPPORT TREATMENT DECISION?
NO
YES
180
CLINICIAN ENTERS ADDITIONAL INFORMATION
182
DOES DISCREPANCY REQUIRE SUPERVISORY APPROVAL?
NO
184
SEQUENCE STORED FOR QUALITY REVIEW
YES
SIGN-OFF *
TREATMENT GUIDELINES MODULE
TREATMENT GUIDELINES MODULE

FIG. 4c

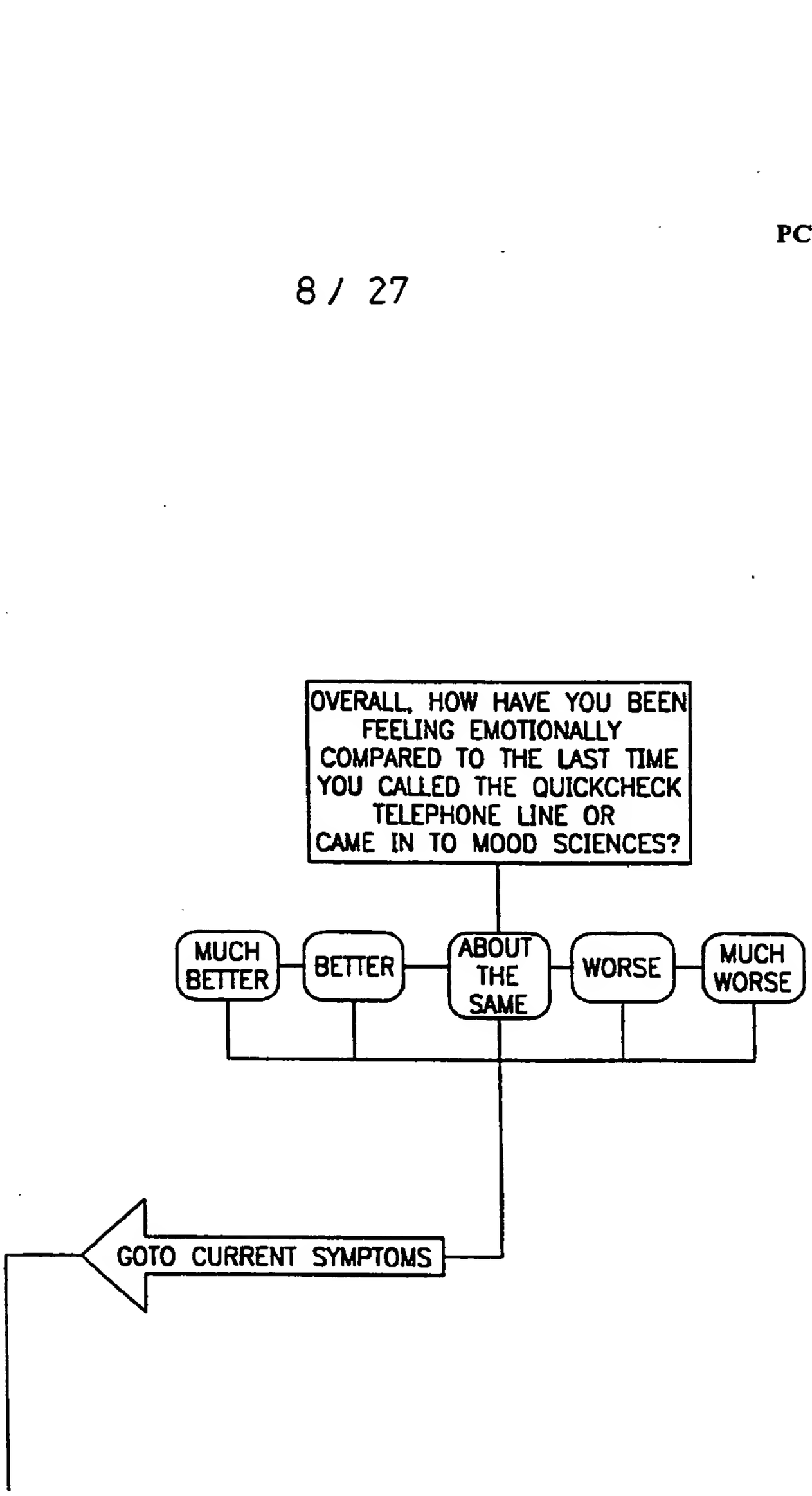

OVERALL, HOW HAVE YOU BEEN FEELING EMOTIONALLY COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME IN TO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE
GOTO CURRENT SYMPTOMS

FIG. 5a

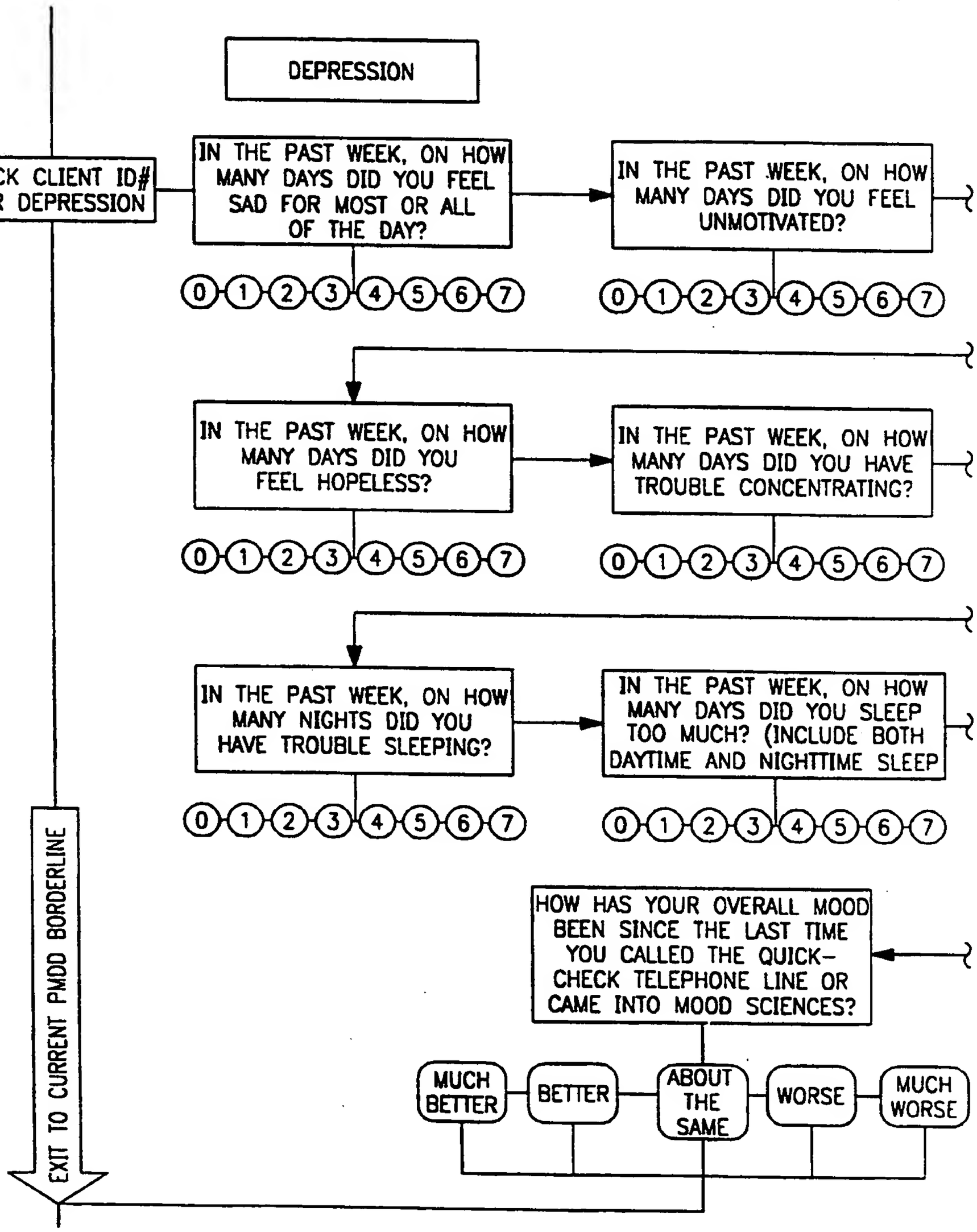

DEPRESSION
CHECK CLIENT ID# FOR DEPRESSION
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL SAD FOR MOST OR ALL OF THE DAY?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL UNMOTIVATED?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL HOPELESS?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE TROUBLE CONCENTRATING?
IN THE PAST WEEK, ON HOW MANY NIGHTS DID YOU HAVE TROUBLE SLEEPING?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU SLEEP TOO MUCH? (INCLUDE BOTH DAYTIME AND NIGHTTIME SLEEP
0 1 2 3 4 5 6 7
EXIT TO CURRENT PMDD BORDERLINE
HOW HAS YOUR OVERALL MOOD BEEN SINCE THE LAST TIME YOU CALLED THE QUICK-CHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE

FIG. 5b-1

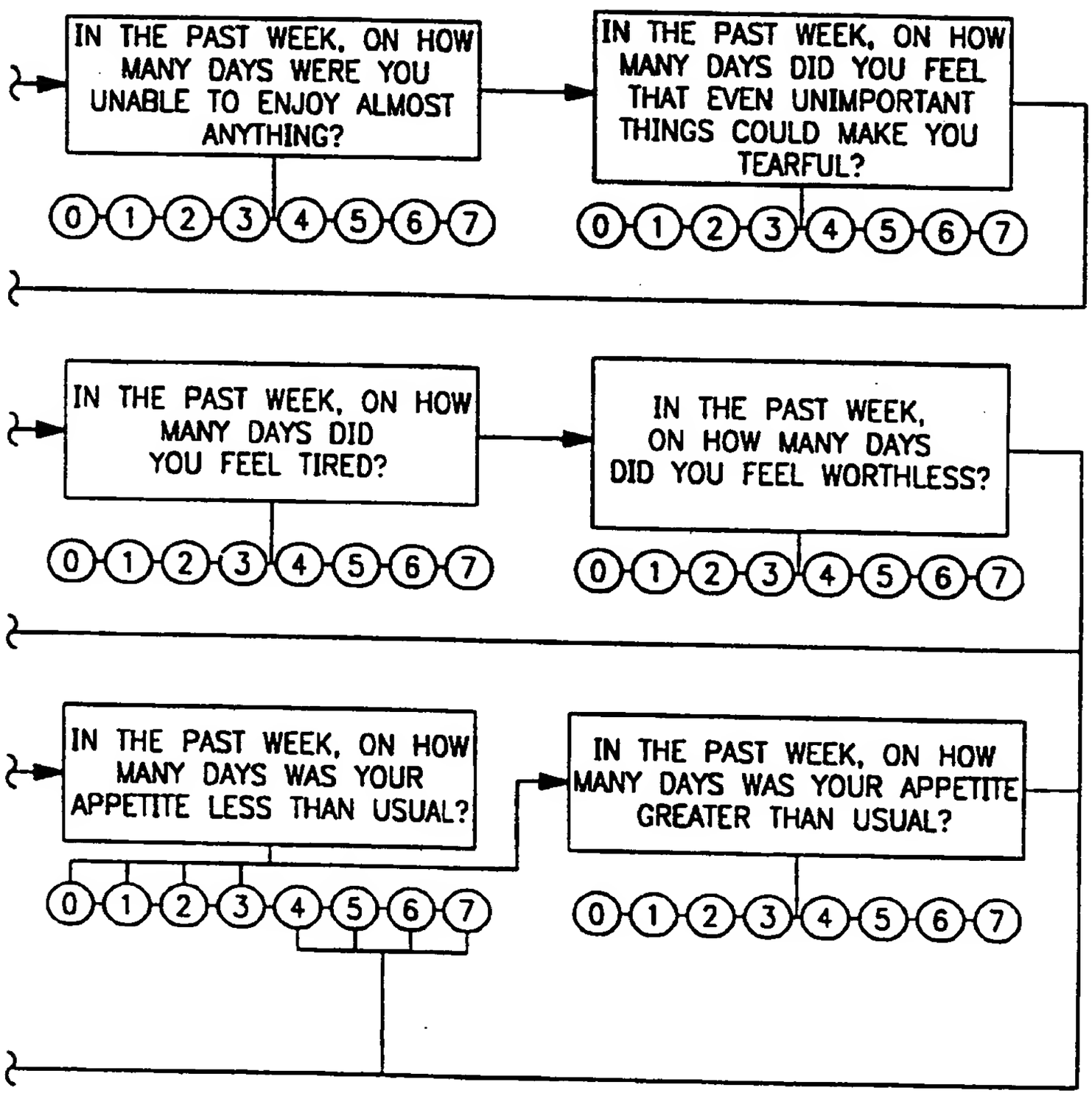

IN THE PAST WEEK, ON HOW MANY DAYS WERE YOU UNABLE TO ENJOY ALMOST ANYTHING?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL THAT EVEN UNIMPORTANT THINGS COULD MAKE YOU TEARFUL?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL TIRED?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL WORTHLESS?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS WAS YOUR APPETITE LESS THAN USUAL?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS WAS YOUR APPETITE GREATER THAN USUAL?
0 1 2 3 4 5 6 7

FIG. 5b-2

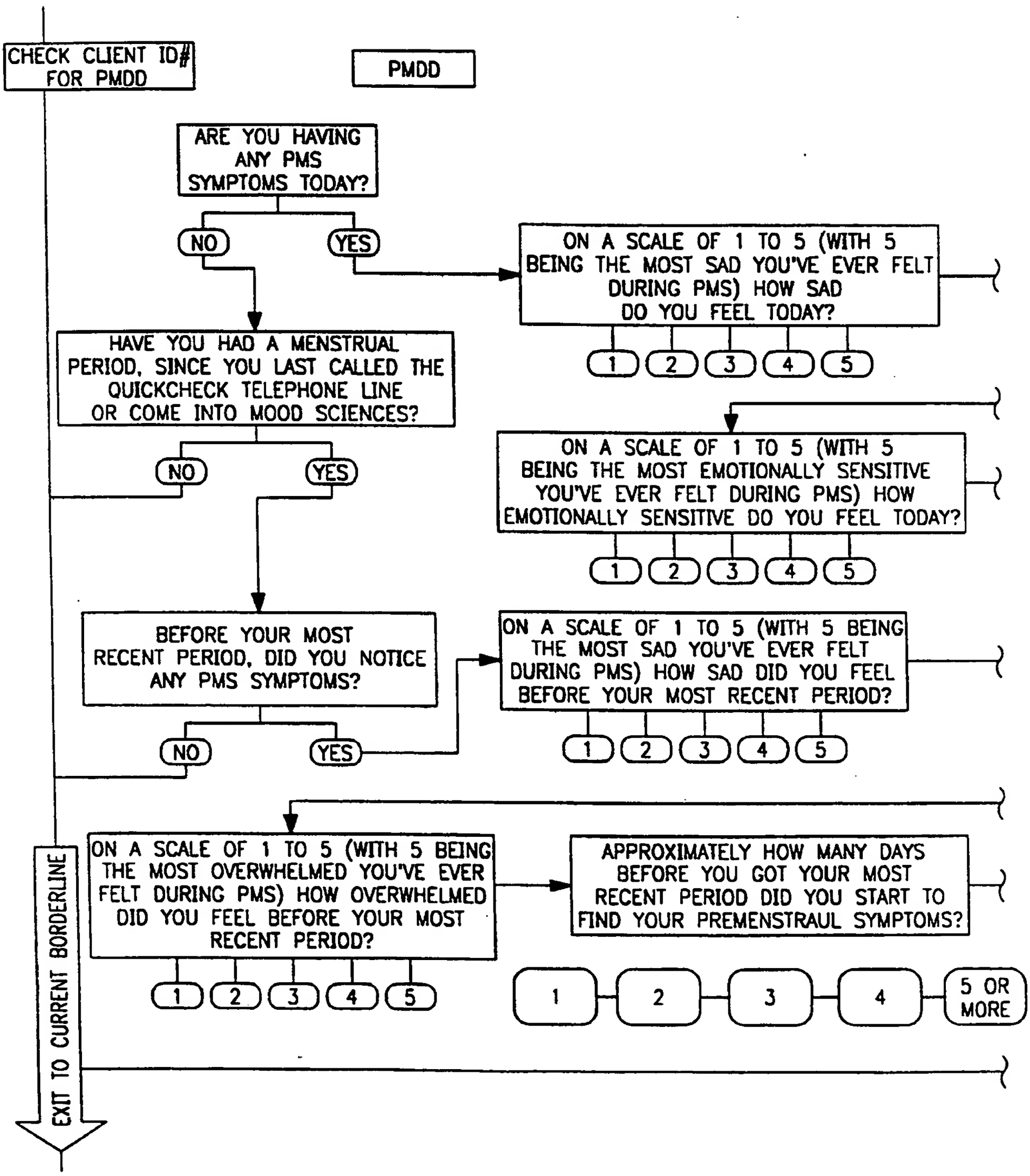

CHECK CLIENT ID# FOR PMDD
PMDD
ARE YOU HAVING ANY PMS SYMPTOMS TODAY?
NO
YES
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST SAD YOU'VE EVER FELT DURING PMS) HOW SAD DO YOU FEEL TODAY?
1
2
3
4
5
HAVE YOU HAD A MENSTRUAL PERIOD, SINCE YOU LAST CALLED THE QUICKCHECK TELEPHONE LINE OR COME INTO MOOD SCIENCES?
NO
YES
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST EMOTIONALLY SENSITIVE YOU'VE EVER FELT DURING PMS) HOW EMOTIONALLY SENSITIVE DO YOU FEEL TODAY?
1
2
3
4
5
BEFORE YOUR MOST RECENT PERIOD, DID YOU NOTICE ANY PMS SYMPTOMS?
NO
YES
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST SAD YOU'VE EVER FELT DURING PMS) HOW SAD DID YOU FEEL BEFORE YOUR MOST RECENT PERIOD?
1
2
3
4
5
EXIT TO CURRENT BORDERLINE
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST OVERWHELMED YOU'VE EVER FELT DURING PMS) HOW OVERWHELMED DID YOU FEEL BEFORE YOUR MOST RECENT PERIOD?
1
2
3
4
5
APPROXIMATELY HOW MANY DAYS BEFORE YOU GOT YOUR MOST RECENT PERIOD DID YOU START TO FIND YOUR PREMENSTRAUL SYMPTOMS?
1
2
3
4
5 OR MORE

FIG. 5c-1

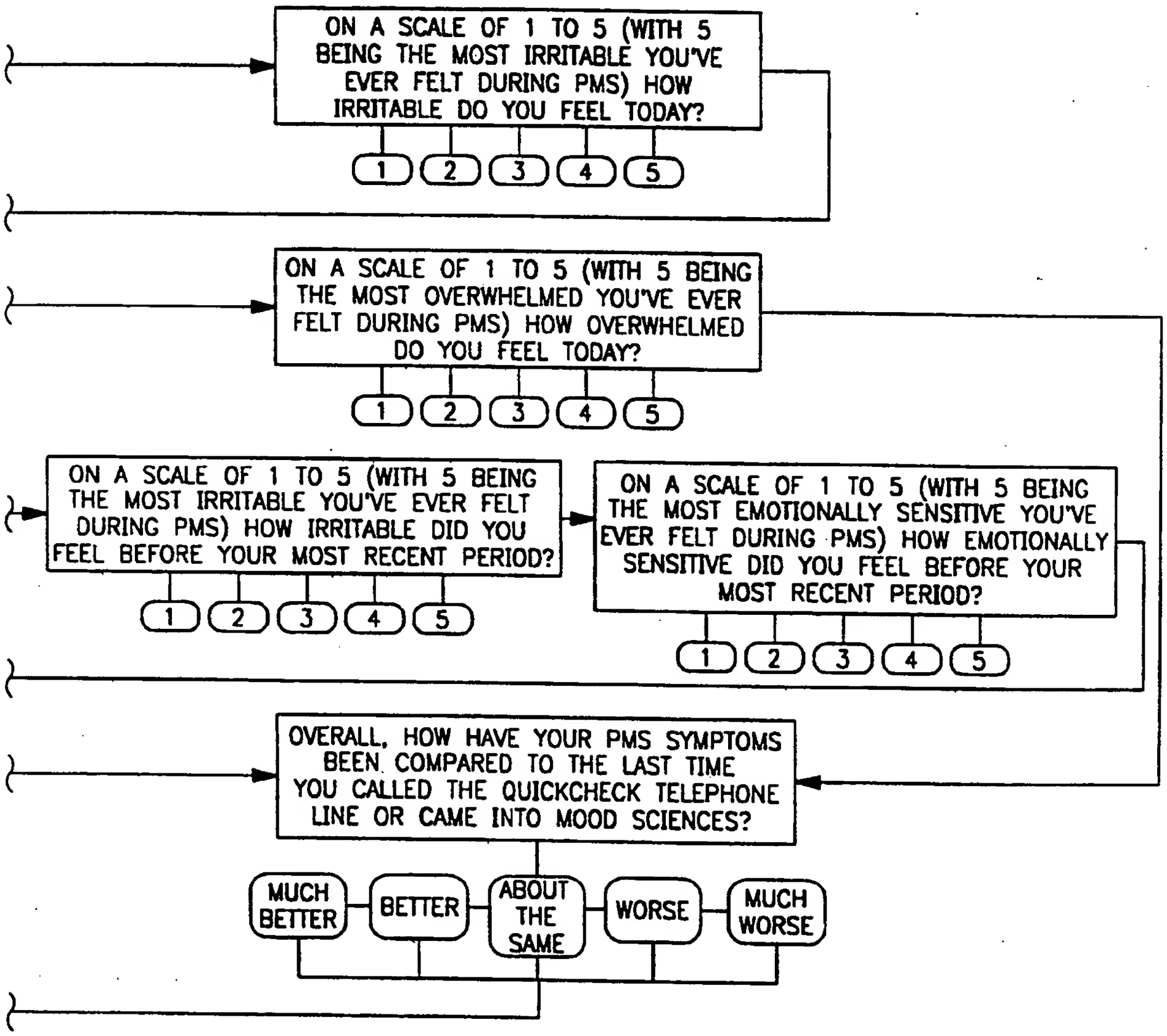

ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST IRRITABLE YOU'VE EVER FELT DURING PMS) HOW IRRITABLE DO YOU FEEL TODAY?
1
2
3
4
5
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST OVERWHELMED YOU'VE EVER FELT DURING PMS) HOW OVERWHELMED DO YOU FEEL TODAY?
1
2
3
4
5
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST IRRITABLE YOU'VE EVER FELT DURING PMS) HOW IRRITABLE DID YOU FEEL BEFORE YOUR MOST RECENT PERIOD?
1
2
3
4
5
ON A SCALE OF 1 TO 5 (WITH 5 BEING THE MOST EMOTIONALLY SENSITIVE YOU'VE EVER FELT DURING PMS) HOW EMOTIONALLY SENSITIVE DID YOU FEEL BEFORE YOUR MOST RECENT PERIOD?
1
2
3
4
5
OVERALL, HOW HAVE YOUR PMS SYMPTOMS BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE

FIG. 5c-2

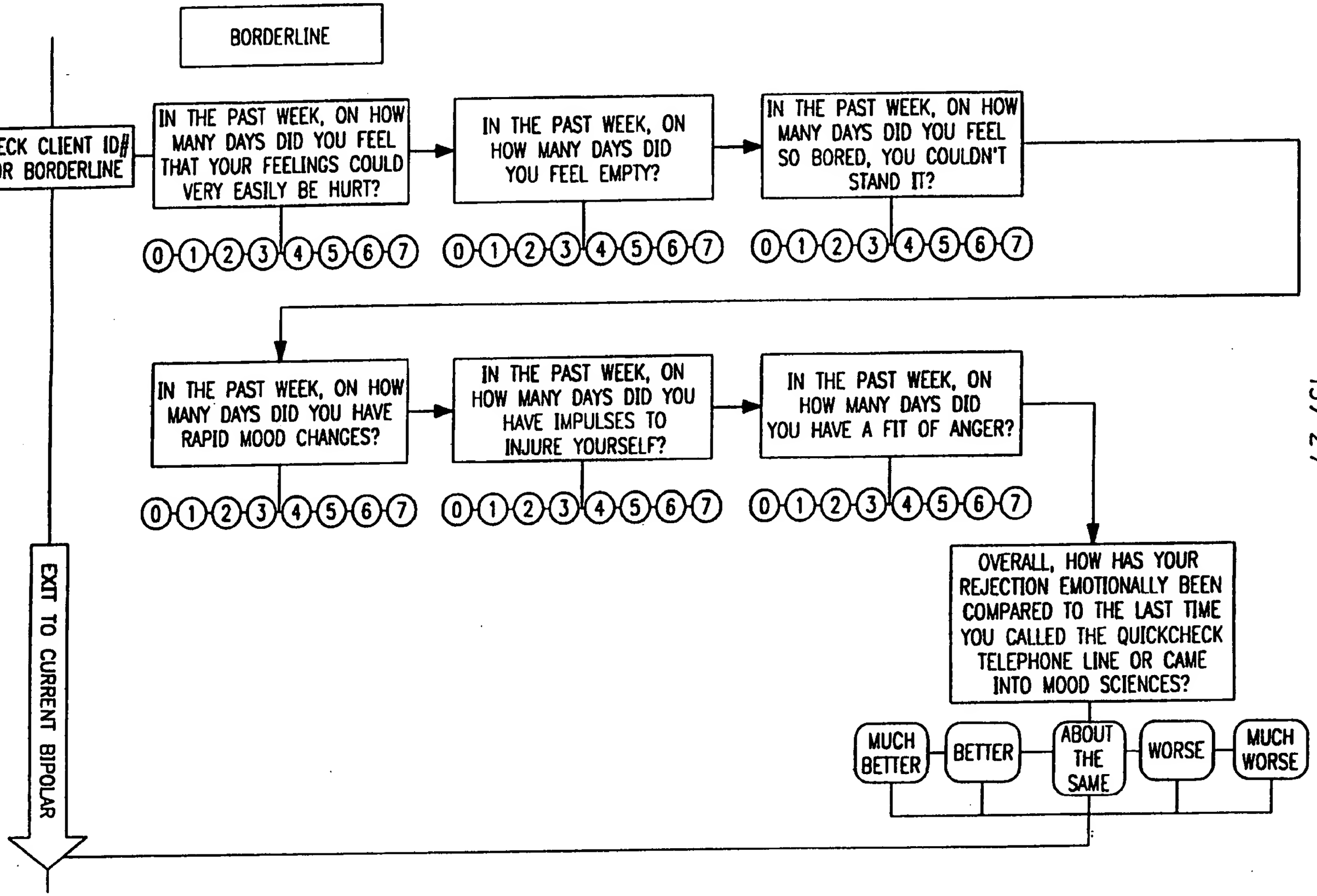

BORDERLINE
CHECK CLIENT ID# FOR BORDERLINE
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL THAT YOUR FEELINGS COULD VERY EASILY BE HURT?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL EMPTY?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL SO BORED, YOU COULDN'T STAND IT?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE RAPID MOOD CHANGES?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE IMPULSES TO INJURE YOURSELF?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE A FIT OF ANGER?
EXIT TO CURRENT BIPOLAR
OVERALL, HOW HAS YOUR REJECTION EMOTIONALLY BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE

FIG. 5d

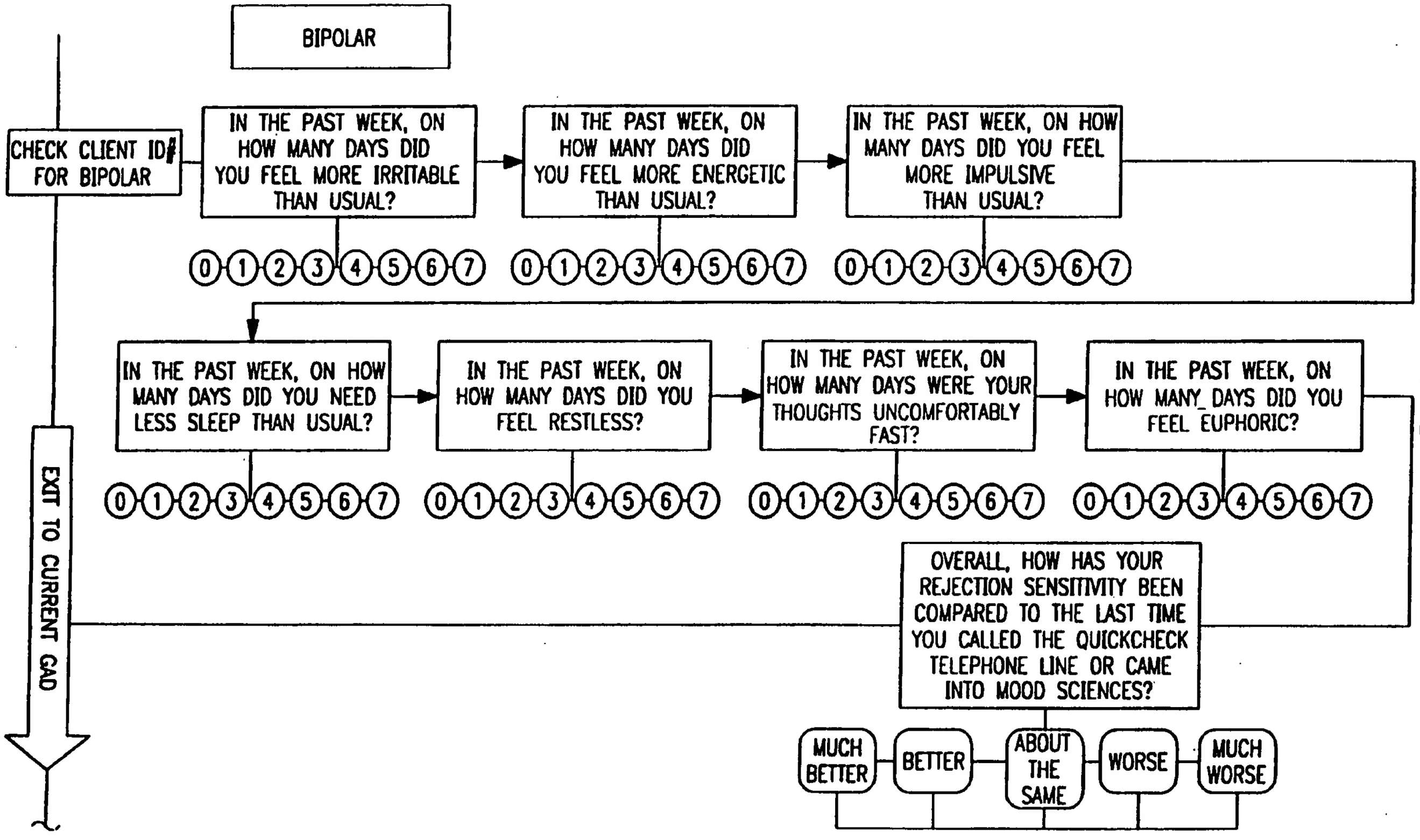

BIPOLAR
CHECK CLIENT ID# FOR BIPOLAR
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL MORE IRRITABLE THAN USUAL?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL MORE ENERGETIC THAN USUAL?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL MORE IMPULSIVE THAN USUAL?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU NEED LESS SLEEP THAN USUAL?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL RESTLESS?
IN THE PAST WEEK, ON HOW MANY DAYS WERE YOUR THOUGHTS UNCOMFORTABLY FAST?
IN THE PAST WEEK, ON HOW MANY_DAYS DID YOU FEEL EUPHORIC?
OVERALL, HOW HAS YOUR REJECTION SENSITIVITY BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE
EXIT TO CURRENT GAD

FIG. 5e-1

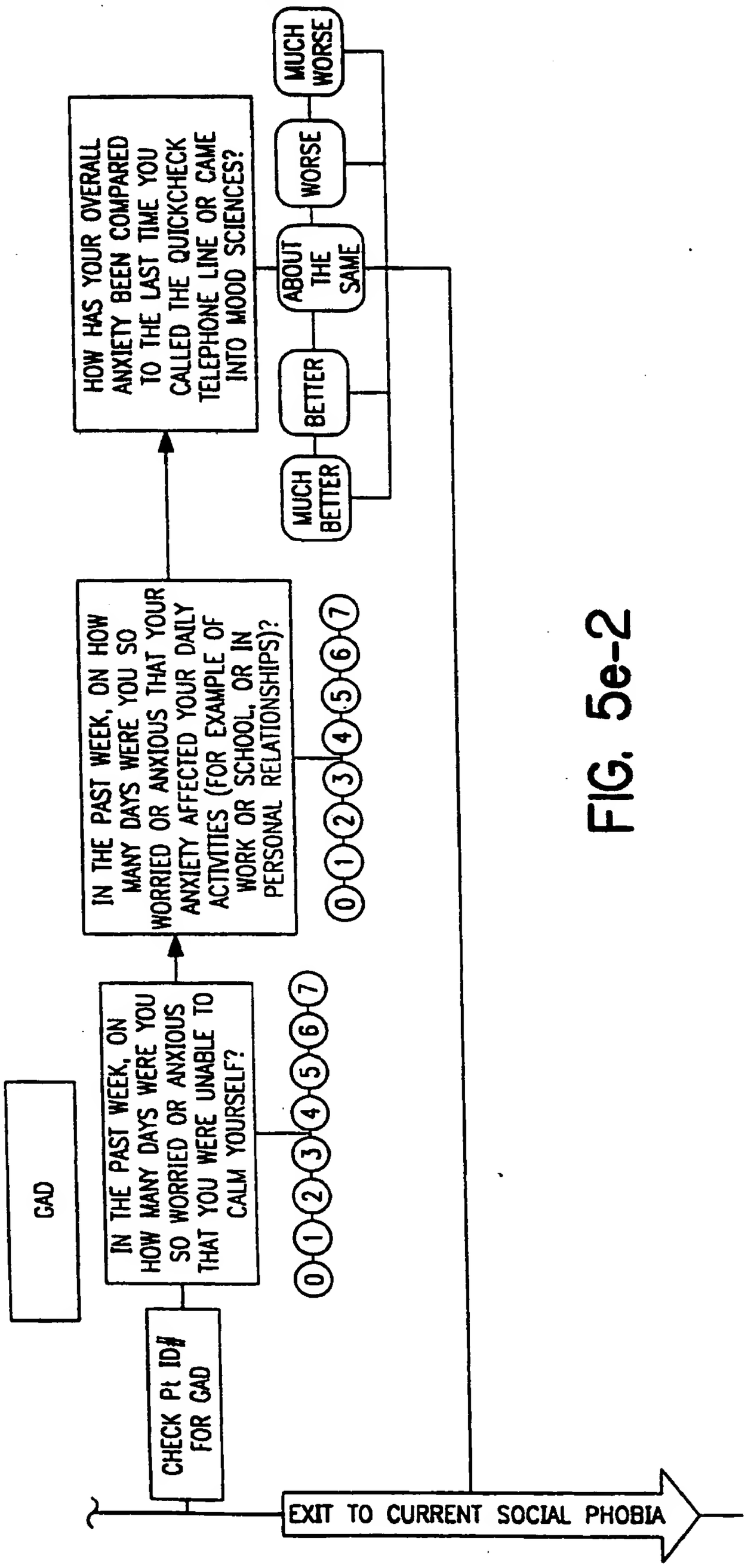

GAD
IN THE PAST WEEK, ON HOW MANY DAYS WERE YOU SO WORRIED OR ANXIOUS THAT YOU WERE UNABLE TO CALM YOURSELF?
0 1 2 3 4 5 6 7
CHECK Pt ID# FOR GAD
IN THE PAST WEEK, ON HOW MANY DAYS WERE YOU SO WORRIED OR ANXIOUS THAT YOUR ANXIETY AFFECTED YOUR DAILY ACTIVITIES (FOR EXAMPLE OF WORK OR SCHOOL, OR IN PERSONAL RELATIONSHIPS)?
0 1 2 3 4 5 6 7
HOW HAS YOUR OVERALL ANXIETY BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE
EXIT TO CURRENT SOCIAL PHOBIA

FIG. 5e-2

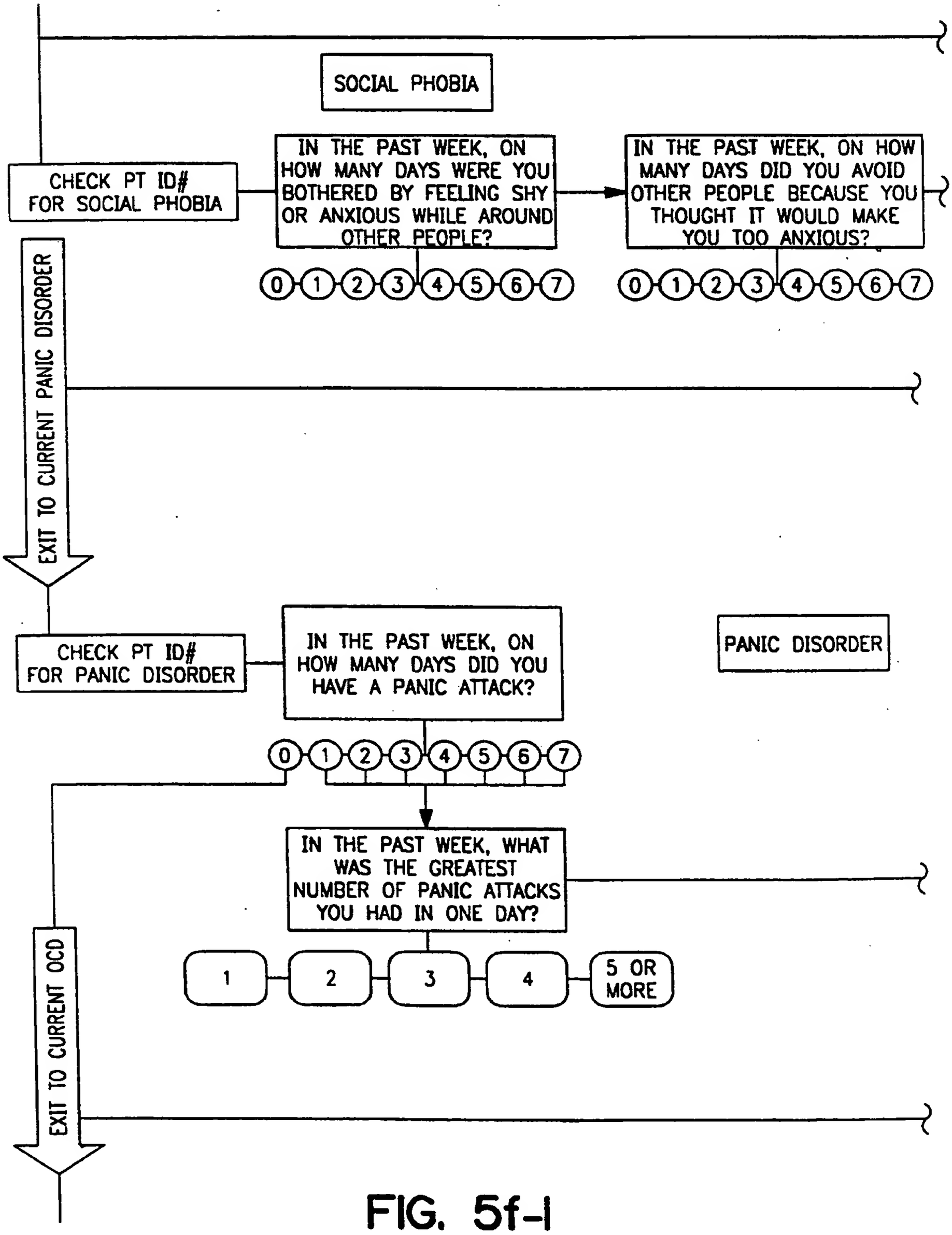
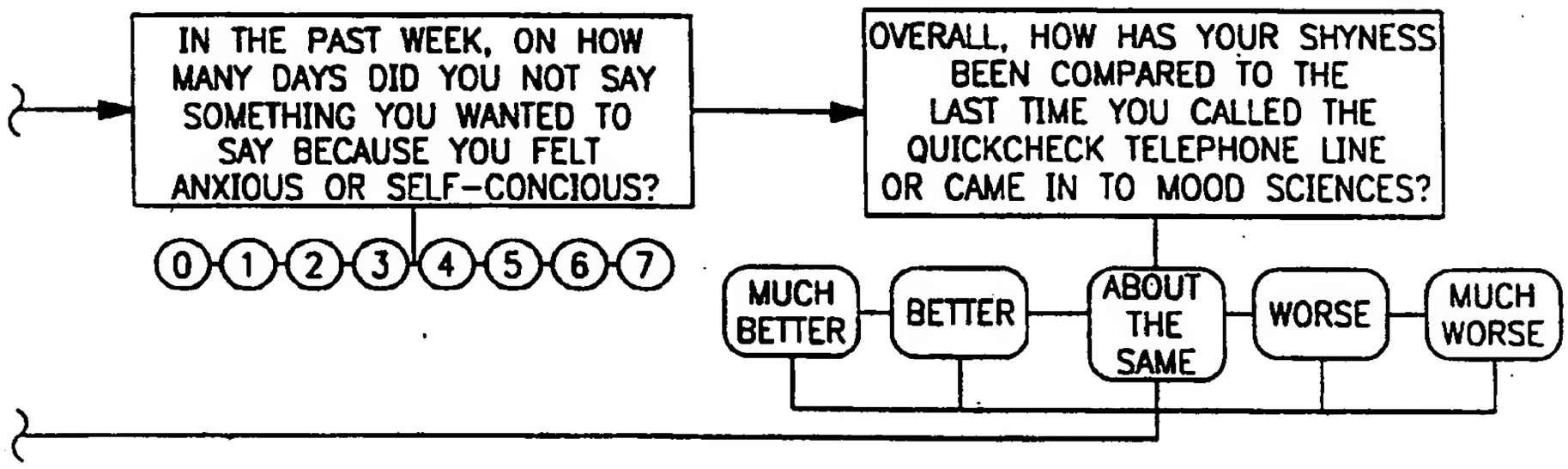

SOCIAL PHOBIA
CHECK PT ID# FOR SOCIAL PHOBIA
IN THE PAST WEEK, ON HOW MANY DAYS WERE YOU BOTHERED BY FEELING SHY OR ANXIOUS WHILE AROUND OTHER PEOPLE?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU AVOID OTHER PEOPLE BECAUSE YOU THOUGHT IT WOULD MAKE YOU TOO ANXIOUS?
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7
EXIT TO CURRENT PANIC DISORDER
PANIC DISORDER
CHECK PT ID# FOR PANIC DISORDER
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE A PANIC ATTACK?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, WHAT WAS THE GREATEST NUMBER OF PANIC ATTACKS YOU HAD IN ONE DAY?
1
2
3
4
5 OR MORE
EXIT TO CURRENT OCD

FIG. 5f-1


IN THE PAST WEEK, ON HOW MANY DAYS DID YOU NOT SAY SOMETHING YOU WANTED TO SAY BECAUSE YOU FELT ANXIOUS OR SELF-CONCIOUS?
0
1
2
3
4
5
6
7
OVERALL, HOW HAS YOUR SHYNESS BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME IN TO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE

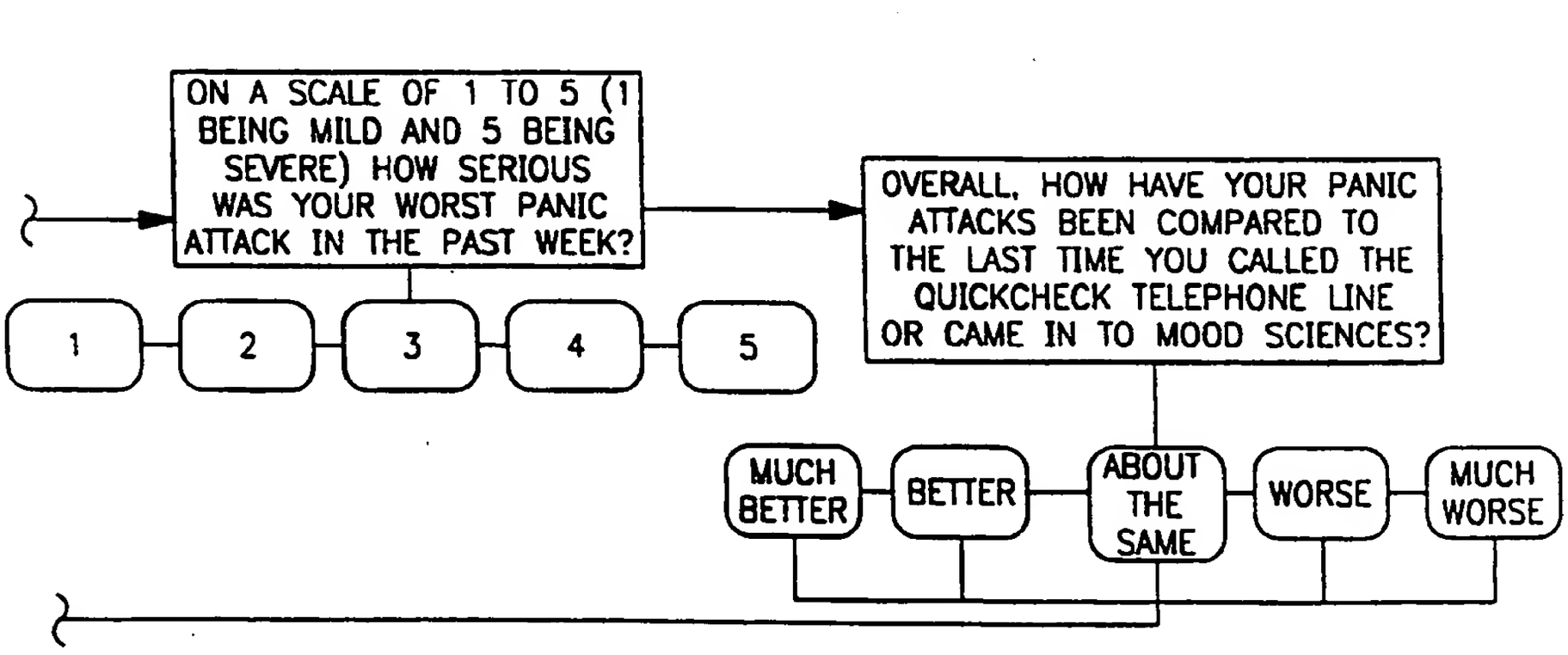

ON A SCALE OF 1 TO 5 (1 BEING MILD AND 5 BEING SEVERE) HOW SERIOUS WAS YOUR WORST PANIC ATTACK IN THE PAST WEEK?
1
2
3
4
5
OVERALL, HOW HAVE YOUR PANIC ATTACKS BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME IN TO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE

FIG. 5f-2

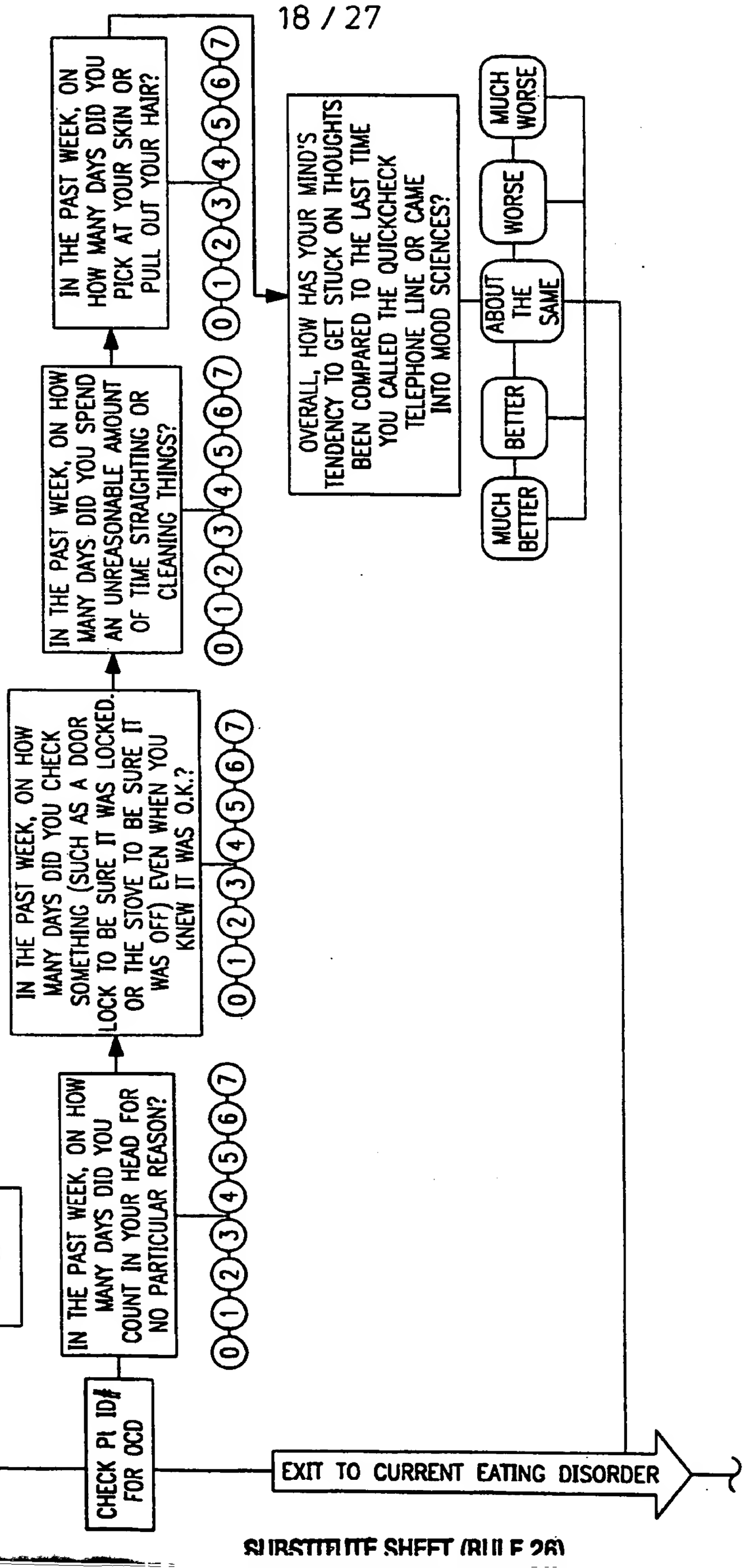

IN THE PAST WEEK, ON HOW MANY DAYS DID YOU CHECK SOMETHING (SUCH AS A DOOR LOCK TO BE SURE IT WAS LOCKED. OR THE STOVE TO BE SURE IT WAS OFF) EVEN WHEN YOU KNEW IT WAS O.K.?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU SPEND AN UNREASONABLE AMOUNT OF TIME STRAIGHTING OR CLEANING THINGS?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU PICK AT YOUR SKIN OR PULL OUT YOUR HAIR?
0 1 2 3 4 5 6 7
OCD
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU COUNT IN YOUR HEAD FOR NO PARTICULAR REASON?
0 1 2 3 4 5 6 7
CHECK PI ID# FOR OCD
OVERALL, HOW HAS YOUR MIND'S TENDENCY TO GET STUCK ON THOUGHTS BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH WORSE
WORSE
ABOUT THE SAME
BETTER
MUCH BETTER
EXIT TO CURRENT EATING DISORDER

FIG. 5g-1

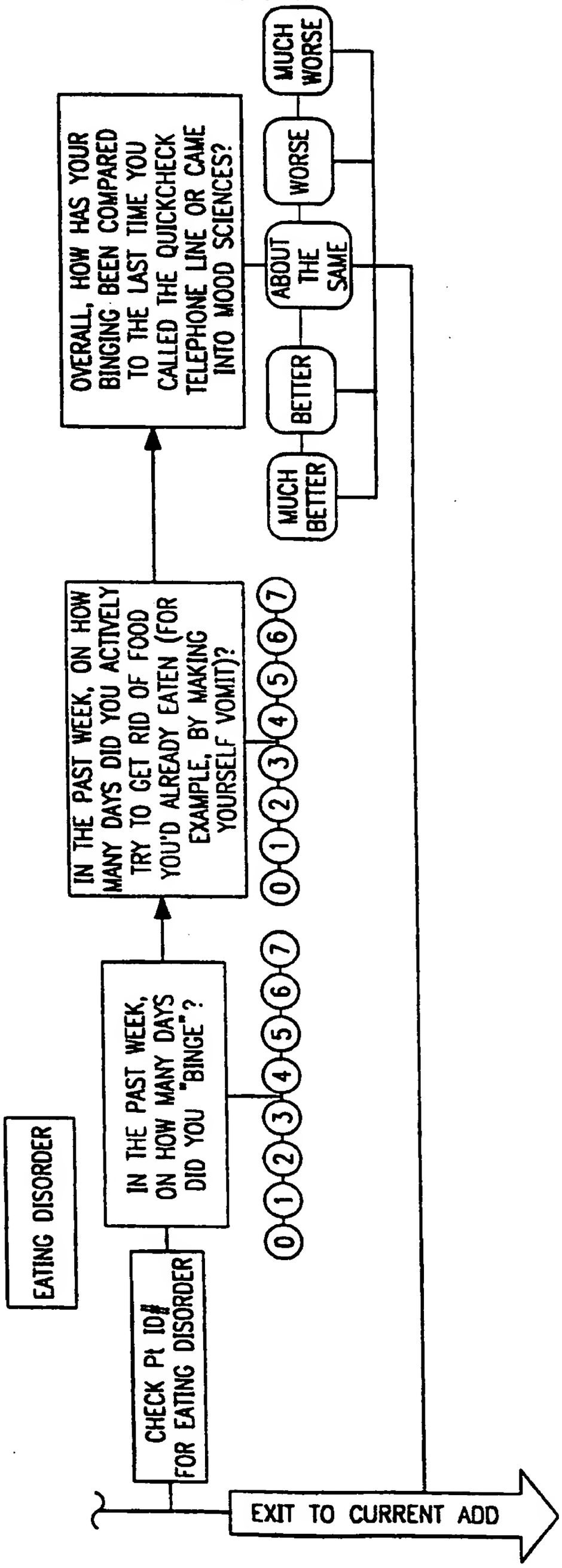

EATING DISORDER
CHECK Pt ID# FOR EATING DISORDER
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU "BINGE"?
0 1 2 3 4 5 6 7
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU ACTIVELY TRY TO GET RID OF FOOD YOU'D ALREADY EATEN (FOR EXAMPLE, BY MAKING YOURSELF VOMIT)?
0 1 2 3 4 5 6 7
OVERALL, HOW HAS YOUR BINGING BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE LINE OR CAME INTO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE
EXIT TO CURRENT ADD

FIG. 5g-2

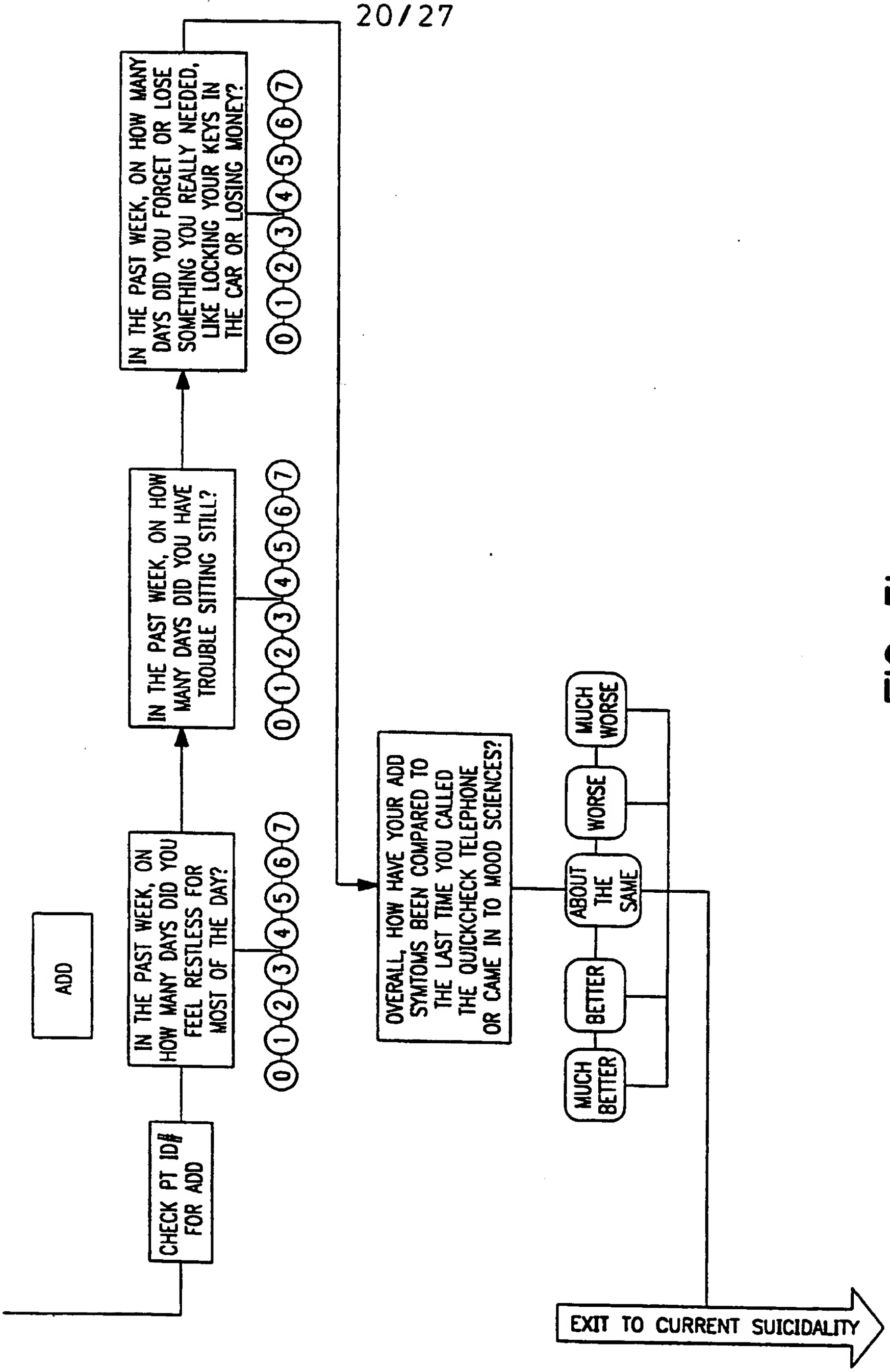

ADD
CHECK PT ID# FOR ADD
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU HAVE TROUBLE SITTING STILL?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL RESTLESS FOR MOST OF THE DAY?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FORGET OR LOSE SOMETHING YOU REALLY NEEDED, LIKE LOCKING YOUR KEYS IN THE CAR OR LOSING MONEY?
0 1 2 3 4 5 6 7
OVERALL, HOW HAVE YOUR ADD SYMTOMS BEEN COMPARED TO THE LAST TIME YOU CALLED THE QUICKCHECK TELEPHONE OR CAME IN TO MOOD SCIENCES?
MUCH BETTER
BETTER
ABOUT THE SAME
WORSE
MUCH WORSE
EXIT TO CURRENT SUICIDALITY

FIG. 5h

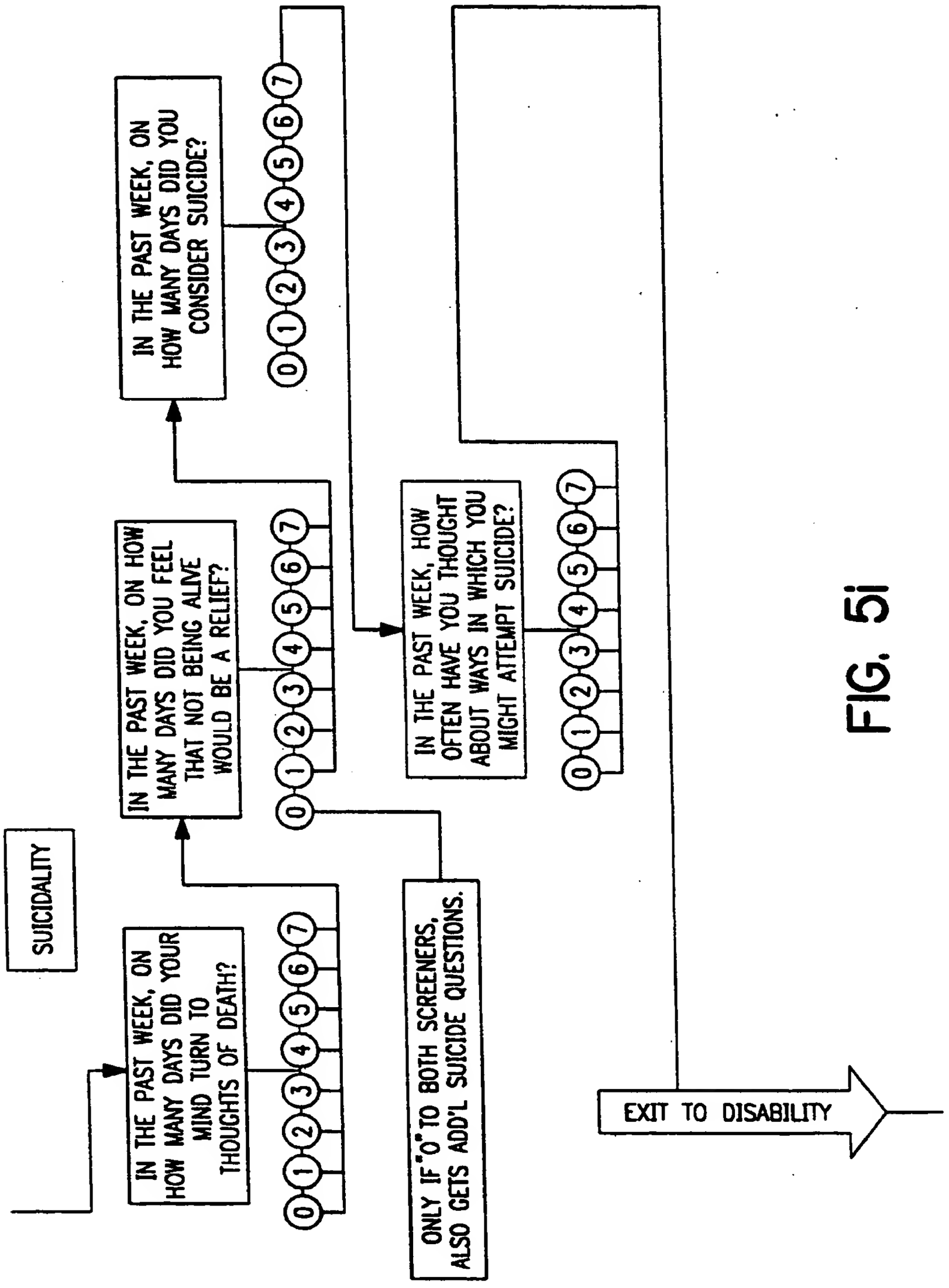

SUICIDALITY
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU FEEL THAT NOT BEING ALIVE WOULD BE A RELIEF?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOU CONSIDER SUICIDE?
IN THE PAST WEEK, ON HOW MANY DAYS DID YOUR MIND TURN TO THOUGHTS OF DEATH?
IN THE PAST WEEK, HOW OFTEN HAVE YOU THOUGHT ABOUT WAYS IN WHICH YOU MIGHT ATTEMPT SUICIDE?
0 1 2 3 4 5 6 7
ONLY IF "0" TO BOTH SCREENERS, ALSO GETS ADD'L SUICIDE QUESTIONS.
EXIT TO DISABILITY

FIG. 5i

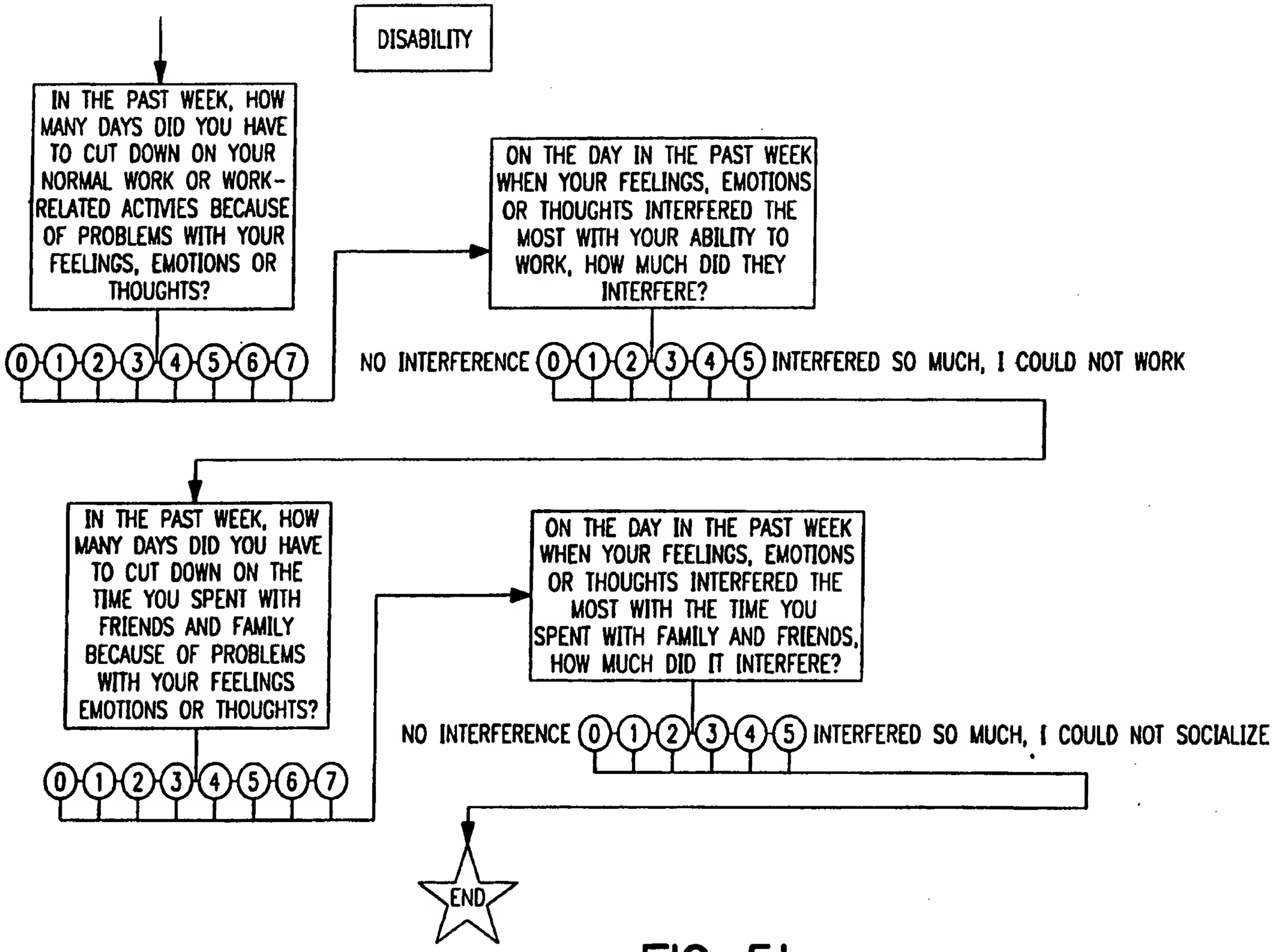

DISABILITY
IN THE PAST WEEK, HOW MANY DAYS DID YOU HAVE TO CUT DOWN ON YOUR NORMAL WORK OR WORK-RELATED ACTIVIES BECAUSE OF PROBLEMS WITH YOUR FEELINGS, EMOTIONS OR THOUGHTS?
0 1 2 3 4 5 6 7
ON THE DAY IN THE PAST WEEK WHEN YOUR FEELINGS, EMOTIONS OR THOUGHTS INTERFERED THE MOST WITH YOUR ABILITY TO WORK, HOW MUCH DID THEY INTERFERE?
NO INTERFERENCE 0 1 2 3 4 5 INTERFERED SO MUCH, I COULD NOT WORK
IN THE PAST WEEK, HOW MANY DAYS DID YOU HAVE TO CUT DOWN ON THE TIME YOU SPENT WITH FRIENDS AND FAMILY BECAUSE OF PROBLEMS WITH YOUR FEELINGS EMOTIONS OR THOUGHTS?
0 1 2 3 4 5 6 7
ON THE DAY IN THE PAST WEEK WHEN YOUR FEELINGS, EMOTIONS OR THOUGHTS INTERFERED THE MOST WITH THE TIME YOU SPENT WITH FAMILY AND FRIENDS, HOW MUCH DID IT INTERFERE?
NO INTERFERENCE 0 1 2 3 4 5 INTERFERED SO MUCH, I COULD NOT SOCIALIZE
END

FIG. 5j

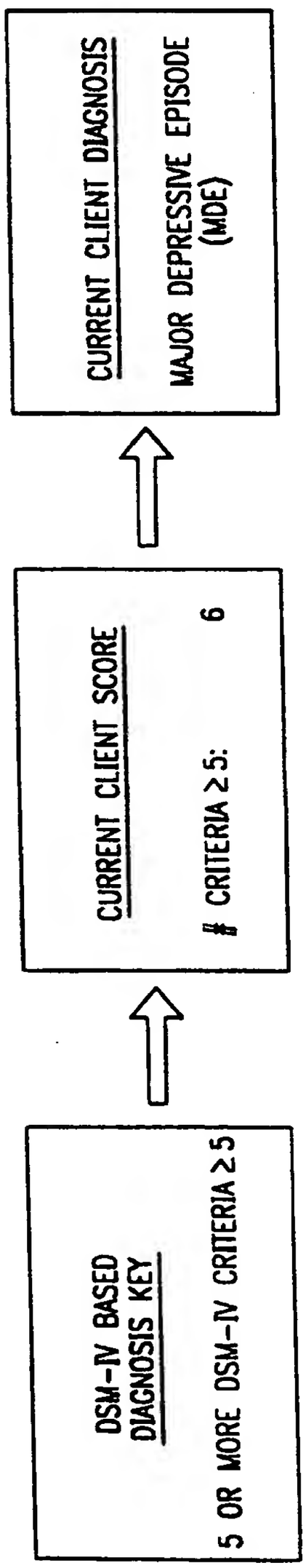

DSM-IV BASED
DIAGNOSIS KEY
5 OR MORE DSM-IV CRITERIA ≥ 5
CURRENT CLIENT SCORE
CRITERIA ≥ 5: 6
CURRENT CLIENT DIAGNOSIS
MAJOR DEPRESSIVE EPISODE
(MDE)

FIG. 6

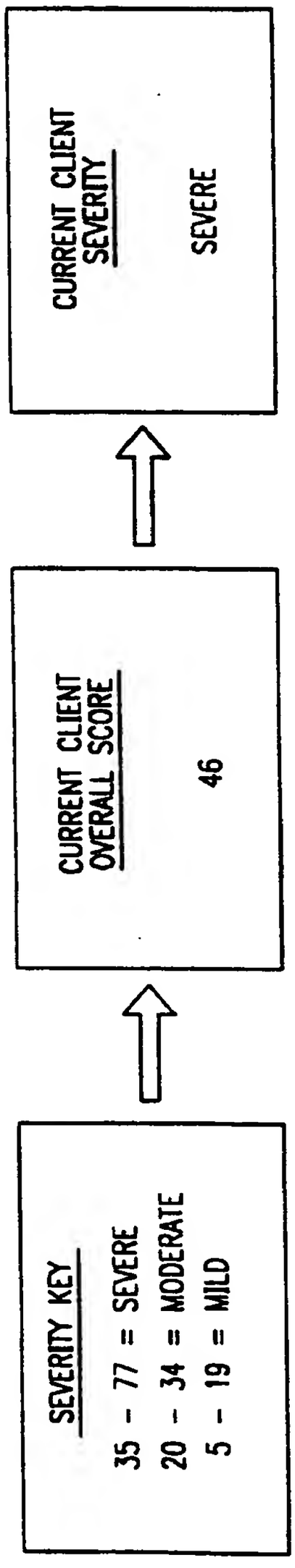

CURRENT CLIENT SEVERITY
SEVERE
CURRENT CLIENT OVERALL SCORE
46
SEVERITY KEY
35 - 77 = SEVERE
20 - 34 = MODERATE
5 - 19 = MILD

FIG. 7

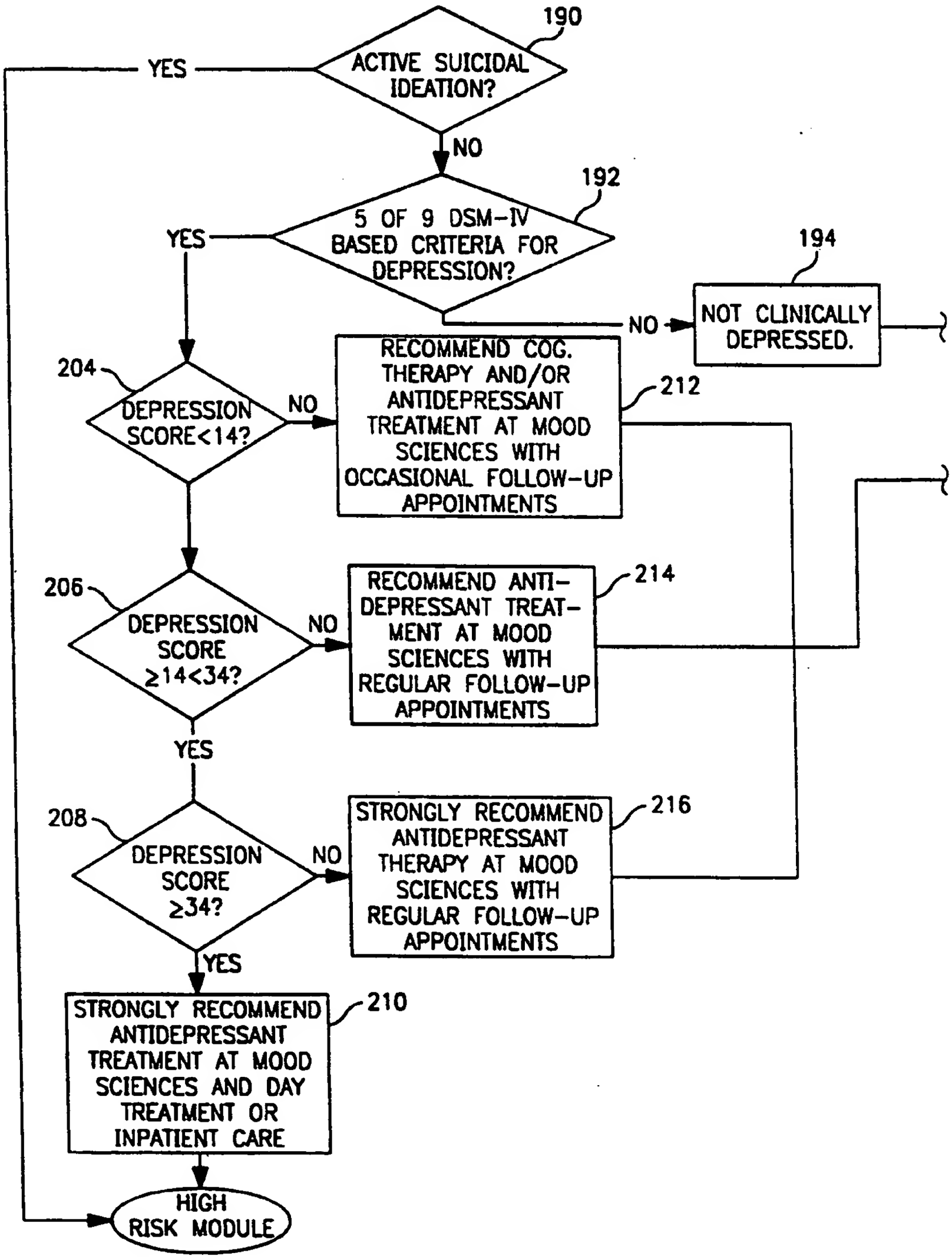

190
ACTIVE SUICIDAL IDEATION?
YES
NO
192
5 OF 9 DSM-IV BASED CRITERIA FOR DEPRESSION?
YES
NO
194
NOT CLINICALLY DEPRESSED.
204
DEPRESSION SCORE<14?
NO
RECOMMEND COG. THERAPY AND/OR ANTIDEPRESSANT TREATMENT AT MOOD SCIENCES WITH OCCASIONAL FOLLOW-UP APPOINTMENTS
212
206
DEPRESSION SCORE ≥14<34?
NO
RECOMMEND ANTI-DEPRESSANT TREAT-MENT AT MOOD SCIENCES WITH REGULAR FOLLOW-UP APPOINTMENTS
214
YES
208
DEPRESSION SCORE ≥34?
NO
STRONGLY RECOMMEND ANTIDEPRESSANT THERAPY AT MOOD SCIENCES WITH REGULAR FOLLOW-UP APPOINTMENTS
216
YES
STRONGLY RECOMMEND ANTIDEPRESSANT TREATMENT AT MOOD SCIENCES AND DAY TREATMENT OR INPATIENT CARE
210
HIGH RISK MODULE

FIG. 8a

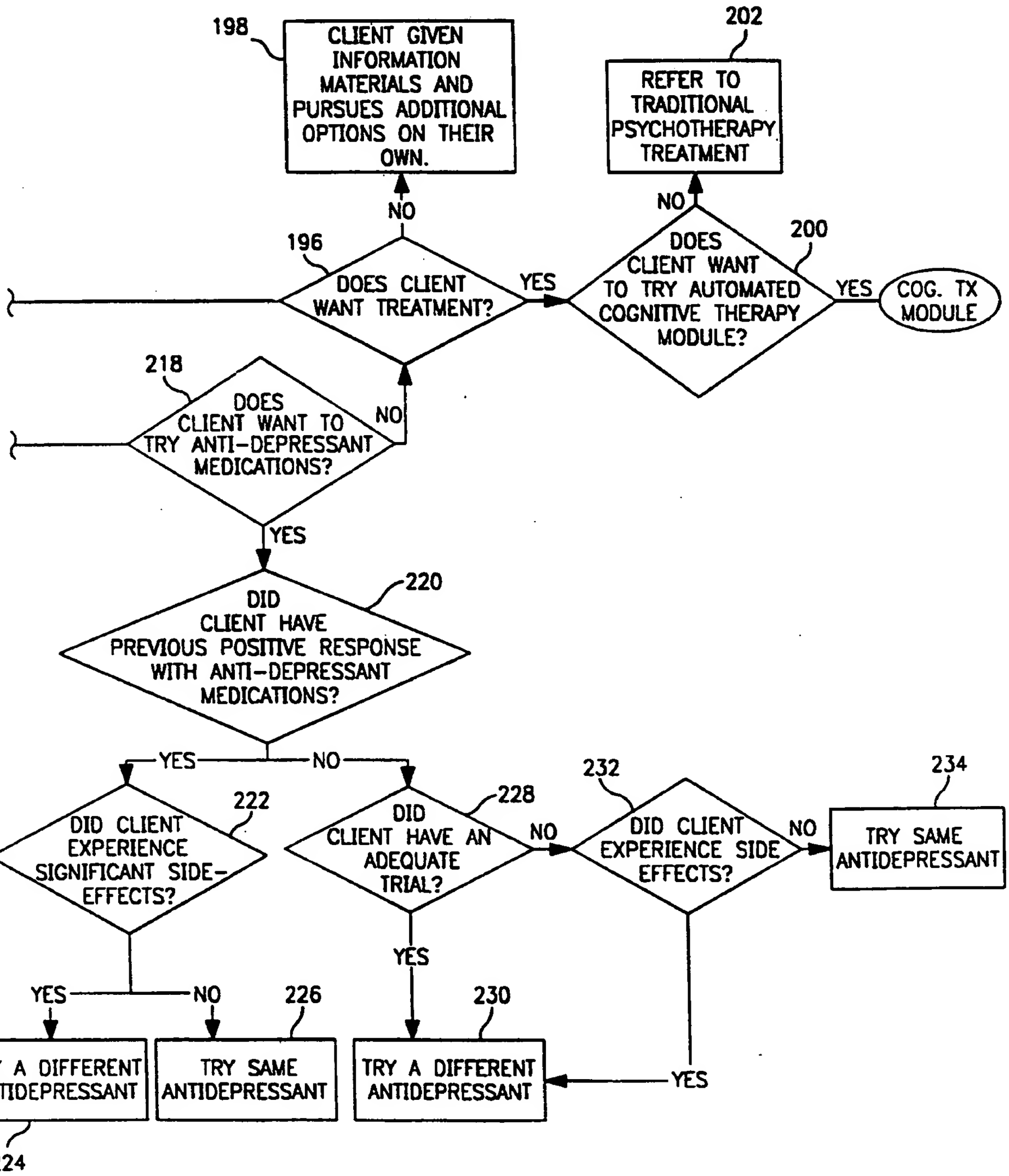

198
CLIENT GIVEN INFORMATION MATERIALS AND PURSUES ADDITIONAL OPTIONS ON THEIR OWN.
202
REFER TO TRADITIONAL PSYCHOTHERAPY TREATMENT
NO
196
DOES CLIENT WANT TREATMENT?
YES
NO
200
DOES CLIENT WANT TO TRY AUTOMATED COGNITIVE THERAPY MODULE?
YES
COG. TX MODULE
218
DOES CLIENT WANT TO TRY ANTI-DEPRESSANT MEDICATIONS?
NO
YES
220
DID CLIENT HAVE PREVIOUS POSITIVE RESPONSE WITH ANTI-DEPRESSANT MEDICATIONS?
YES
NO
222
DID CLIENT EXPERIENCE SIGNIFICANT SIDE-EFFECTS?
228
DID CLIENT HAVE AN ADEQUATE TRIAL?
NO
232
DID CLIENT EXPERIENCE SIDE EFFECTS?
NO
234
TRY SAME ANTIDEPRESSANT
YES
YES
NO
226
230
TRY A DIFFERENT ANTIDEPRESSANT
TRY SAME ANTIDEPRESSANT
TRY A DIFFERENT ANTIDEPRESSANT
YES
224

FIG. 8b

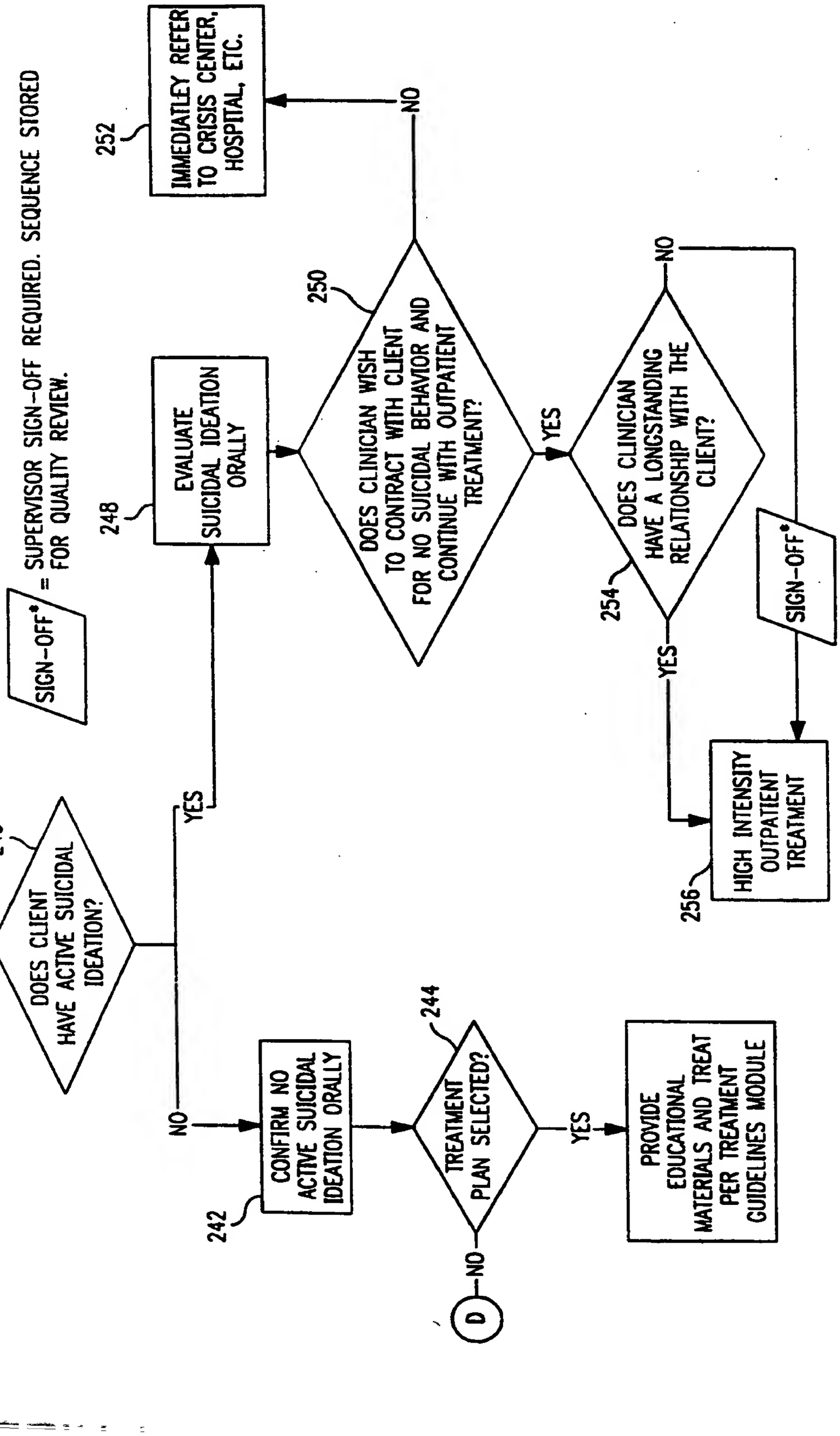

SIGN-OFF* = SUPERVISOR SIGN-OFF REQUIRED. SEQUENCE STORED FOR QUALITY REVIEW.
DOES CLIENT HAVE ACTIVE SUICIDAL IDEATION?
240
YES
NO
CONFIRM NO ACTIVE SUICIDAL IDEATION ORALLY
242
TREATMENT PLAN SELECTED?
244
NO
D
YES
PROVIDE EDUCATIONAL MATERIALS AND TREAT PER TREATMENT GUIDELINES MODULE
EVALUATE SUICIDAL IDEATION ORALLY
248
DOES CLINICIAN WISH TO CONTRACT WITH CLIENT FOR NO SUICIDAL BEHAVIOR AND CONTINUE WITH OUTPATIENT TREATMENT?
250
NO
IMMEDIATLEY REFER TO CRISIS CENTER, HOSPITAL, ETC.
252
YES
DOES CLINICIAN HAVE A LONGSTANDING RELATIONSHIP WITH THE CLIENT?
254
NO
SIGN-OFF*
YES
HIGH INTENSITY OUTPATIENT TREATMENT
256

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/11175

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61B 5/00
US CL :128/920; 600/300

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 128/897, 920, 923-925; 600/300, 301

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,619,991 A (SLOANE et al) 15 April 1997, col. 3 line 47 to col. 6 line 51.	1, 5-7
Y	US 5,435,324 A (BRILL et al) 25 July 1995, col. 5 lines 1-21.	13

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
21 JUNE 1998

Date of mailing of the international search report
22 JUL 1998

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